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An introduction to mental philosophy,



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AN INTRODUCTION
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BY
J. D^Y MORELL, A.M., LL.D.
AUTHOR OF "HISTORY OF PHILOSOPHY," ETC.

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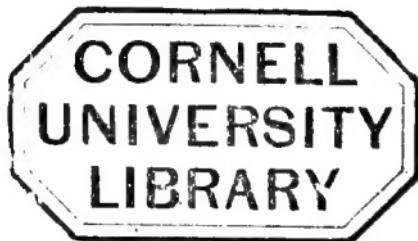
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P R E F A C E.

IT may be useful to the student, as it is certainly just to the authors, to indicate in the Preface some of the sources from which I have derived assistance in working out the systematic view of Psychology contained in the following pages. And, first of all, let me advert to the labours of those who have been for some time investigating psychological questions from the basis of physiology. Since the time when Sir C. Bell discovered the distinction between the sensational and the motor nerves, and Dr Marshall Hall followed it up by the demonstration of the phenomena of reflex action, the attention of physiologists has been much drawn to the elucidation of the functions of the nervous system generally, in relation to mental manifestations. Dr Carpenter, in his *Human Physiology*, took up Dr Marshall Hall's line of research, and showed that the phenomena of reflex action, when traced *upwards*, are found to exist, not only unconsciously, but in connexion with sensations also, thus producing actions of which we are cognizant, but over which we exercise no *volitional* control ; nay, that the cerebral hemispheres themselves may be set in action by various causes, and give rise to mental results with which the consciousness itself is frequently unacquainted, and with which the will

has nothing whatever to do. Dr Laycock, again, in his work on the *Mind and Brain*, has shown the correlation of the physical and mental functions from the most varied points of view, and laid the foundation for a system of Medical Psychology, which future efforts will have to work out into its many practical results. In addition to those above-mentioned (who may be regarded as the pioneers), several other writers, viz., Sir H. Holland,* Sir B. Brodie,† Dr Noble, of Manchester,‡ Mr Robt. Dunn, of London,§ and Mr G. H. Lewes,|| have written popular treatises on psychology, in its connexion with cerebral physiology, which have tended to disseminate and establish many important facts and principles hitherto but little known or regarded by the ordinary writers on mental philosophy. Physiologists on the Continent of Europe have also for some time past been engaged in similar researches, amongst whom the names of Müller, Carus, Virchow, Wagner, Brown Sequard, Lotze, and Volkmann deserve to be specially mentioned. I have based many of the doctrines here brought forward upon the results which have followed from the investigations of these and similar writers; and I am glad to take the present opportunity of acknowledging the great debt we owe, as psychologists, to the growing researches of physiology in this department.

I must refer, next, to the modern school of German Psychology, more particularly that which has sprung out of the life and labours of *Herbart*. Herbart had the merit, during the long period that German

* *Chapters on Mental Physiology.*

‡ *Medical Psychology.*

|| *The Physiology of Common Life.*

+ *Psychological Enquiries.*

§ *Physiological Psychology.*

Philosophy was wrapped in the dreams of Idealism, of maintaining a realistic basis in all his speculations, and of never merging the facts of consciousness in mere dialectical forms and phrases. As the rage for these absolute systems gradually passed away, the value of the Herbartian psychology began to gain credit with the philosophical public ; and, up to the present time, this credit has been steadily increasing. The principal writers, who during the last few years have tended to popularise and establish the fundamental ideas of Herbart's Psychology, are Drobisch,* Waitz,† and Volkmann,‡ to whom might be added many other authors who have applied the same principles to particular departments of philosophical investigation. The whole doctrine of the elaboration of ideas,—their action and reaction,—the method of their passing in and out of consciousness,—their blending by the law of similarity,—and their combination in groups and series, &c., is due mainly to the labours of the Herbartian school; and though I have here reconstructed the whole in accordance with my own general views of mental philosophy, yet I must freely acknowledge that, without the aid of these authors, I should, in all probability, have never been able to combine the phenomena of the human mind as they now appear into one connected psychological system.

In addition to those philosophical writers who represent the school of Herbart properly so called, I ought also to acknowledge my obligations to Professor George, of Rostock (*Lehrbuch der Psychologie*),

* *Erste Grundlehren der Mathematischen Psychologie*, 1850.

† *Lehrbuch des Psychologie als Naturwissenschaft*, 1849.

‡ *Grundriss der Psychologie*, 1856.

for his elaborate investigations into the processes of sensation and perception; to Professor Lazarus (*Das Leben der Seele*), for his analysis of the psychological basis of language; to Professor Fichte (*Anthropologie*), for many valuable hints respecting the *preconscious* phenomena of the human soul; and to Professor Ulrici, late of Halle (*Glauben und Wissen, Logik*, &c.), for his admirably clear and lucid statements respecting the fundamental laws of the human intelligence, and the processes by which our knowledge, our natural beliefs, and our personal convictions, are constructed in accordance with them. Neither ought the long-continued labours of the lamented *Bencke* to be forgotten—labours which, although they have not issued in any distinct school, have yet acted more or less directly upon all the phases of modern psychology, as well as its varied applications to practical life.

Amongst modern English Psychologists, the author to whom I have been most indebted in this work is Mr Herbert Spencer;* more especially to the very able analysis which he has given of the process of reasoning in its qualitative and quantitative forms. Of course, in a purely psychological work, it is not necessary, and would not have been proper, to enter with any detail into logical questions; but so far as I have touched upon the theory of reasoning at all, I have followed to a large extent the pathway which he has pointed out, and which appears to me the most successful analysis which this subject has yet received in our own country.

* *Principles of Psychology.*

With regard to the *execution* of the present Handbook, I may here remark that I have always kept before my eyes a wholesome horror of creating an overgrown and unwieldy book. I have consequently studied brevity and compression as far as possible, laying the chief stress upon the great points to be kept in view, even, perhaps, to the fault of repetition, and leaving the minor results and applications for the present very much in abeyance. Some of the analyses (such as that of the philosophy of language) will, I fear, be found *too compressed*; but I would rather err on this side than the other, and leave the less important questions for future development and illustration, according as experience and criticism may show that they are needed.

As to the *phraseology* employed, I have kept as near as possible to well-known and universally-received terms, only employing others when there seemed to be an absolute *necessity* for it. The principal—indeed, the only—novelty, I believe, in this way, is the adoption of the term “*Residua*.” As some expression, however, is absolutely necessary to embody the *idea* of Residua as employed in the Herbartian psychology, and adopted in the present volume, and as no expression exists in the English psychology which could convey this idea without involving misapprehension, I thought it far better to adopt a new term altogether, and to take one with a Latin root, which would express the notion now embodied in it with the least chance of misconception. The only other strictly un-English term I have employed is the word *Ideation*—a term, I believe, first coined by Mr James Mill. This, however, I have used but rarely, and then in such a way

as to point it out rather as a mere *technicality* than an approved philosophical expression.

I have only to add, that to render this edition more useful as an Examination Text-book, I have asked the aid of a London University graduate, and an experienced tutor, to eliminate from the text what may seem unnecessary or confusing to the student, and to throw the whole into the form suited to the requirements of the London B.A. and other examinations in which psychology is taken as a subject. And, to render the work still more useful to students, a large number of Examination Papers have been appended, which papers could not possibly be answered from the contents of any one book, but as many of which could be dealt with directly, or by inference, from this volume as from any other yet published. The student will do well to keep in mind that, in the London University, the Examiners do not commit themselves to any *school* of Philosophy, and that it is necessary only that he should support his position with adequate reasons for arriving at it.

J. D. MORELL.

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INTRODUCTION.

CHAPTER I.

PRELIMINARY REMARKS ON METHOD.

IN the present work I propose to treat of Mental Philosophy on the plan, and according to the principles, of a *natural science*. By natural science I mean the investigation of any series of facts or phenomena, for the purpose of discovering the more general laws by which they are regulated. Such investigation is carried on by what is usually termed the *inductive method*; and, as this is the method we propose to follow, it will be well to state, in the outset, what are the leading principles on which it is now, by common consent, understood to be grounded; and how far those principles are directly applicable to *mental investigation*.

The main points are the following:—

1. Every *real* science (as opposed to purely *abstract* and formal—such as logic and mathematics) must be based upon *facts*, which lie open to actual observation.
2. Our induction of facts within the range of the science, of which we are treating, must be as *large* and as *varied* as possible.
3. The phenomena which lie open immediately to our

observation should be carefully *analysed*, to discover the more elementary facts of which they are constituted.

4. Hypotheses may be employed, as tentative efforts, to grasp the general law, to which the facts conform ; but we must be ready to transform or abandon such hypotheses according as the facts may require.

5. The natural course of all science is a gradual progression from one degree of generality to another, the less general result being included in the more general ; until we arrive at what are termed " The Universal Laws of Nature."

6. The different sciences are closely connected ; so that what is established in one becomes afterwards data for the investigation of another. No real science can stand simply on its own facts, isolated from all the other results of scientific research.

7. The principal instrument by which we are enabled to analyse phenomena is *experiment*.

8. Where experiment is precluded by the nature of the case, we must be guided by *analogy*.

These form the leading principles of inductive research, and we have now to determine, whether they apply to mental philosophy as surely and as completely as they do to the natural sciences.

And first of all, with regard to the *facts* on which Mental Philosophy is based, they are not observed exactly in the same way as are those of natural science. The latter, for the most part, appeal directly to our senses ; while the former elude the eye of sense, and can only be known by inward observation. This does not make any difference, however, as to the application of the general principle—that mental as well as natural science must have a basis of *fact* on which to rest ; for no one can rationally refuse to admit that our instincts, propensities, sensations, perceptions, mental reproductions, associations, passions, emotions, reasonings, and so forth, form as veritable a body of *actual phenomena*, capable

of being observed and expressed, as are the outward facts with which any other science is conversant. The mere circumstance of the one being observed by the outward senses, and the other by the inward consciousness, does not alter the scientific aspect of the question in relation to method. In the one case, as in the other, we have a body of facts which can be known and expressed;—facts, too, which are not arbitrary, but which follow definite laws in regard to their production and sequence. To determine the sequences and laws of mental phenomena is the problem of mental science, just as it is the aim of the natural sciences to determine the laws and sequences of nature. In whatever way, therefore, the facts may be observed, they *exist* equally in the science of mind as in that of matter, and form the starting-point from which all scientific observation must set out.

Secondly. The range of our induction in the case of mental as well as natural science has to be as broad as possible. Most systems of mental philosophy hitherto constructed have failed in this particular. Instead of taking the science of mind as embracing the whole range of *human* phenomena, whether within or without the sphere of consciousness, they have confined their researches to a comparatively limited region of observation, and thus rendered it almost impossible to arrive at any highly generalised results. It is by taking examples as widely as possible separated from each other and tracing out what is common to them all, that we are enabled most readily to detect the more general and fundamental facts of *every science*. Eminently is this the case with mental philosophy. It is, in truth, only since the activity of the mind has been recognised as one particular province of the vital energies, and the facts of life and consciousness have been brought into correlation with each other, that any well-grounded hopes of developing the compass of mental philosophy have been seriously entertained. In this respect, therefore, as in that before stated, the general

principles of induction have shown themselves strictly applicable to mental researches.

Thirdly. The *analysis* of complex phenomena is one of the main points to be aimed at by the psychologist ; and is as essential to *mental* as to *natural* science. In nature we very rarely meet with simple elements and *primary* phenomena. Almost everything that appeals to our observation is a *complex result* ; and the main object of scientific research is to separate these results, so as to discover the simpler agencies by which they are brought about. But *mental* phenomena are fully as complex as *natural*. Acts of memory, of judgment, of abstraction and generalisation, emotional states, and determinations of the will, are all highly complex in their nature. We cannot take a single *idea*, and investigate the history of its origin and growth, without finding that a great number of simpler mental operations have been engaged in its rise and development. In fact, the main purport of all true psychology is to trace back our ordinary mental states to their *origin* ; to discover the few simple processes from which they proceed ; and to follow the steps by which these simple processes have become complex. *Mental analysis* occupies, therefore, as large a place in the science of mind as the analysis of ordinary phenomena in the science of nature. In this respect the inductive method is equally applicable to both.

Fourthly. The employment of hypotheses, at least for the present, is quite indispensable. Even the most probable theories which modern psychologists have propounded respecting the origin of our ideas, and the relationship existing between the nervous system and the powers of mental manifestation, are hypothetical. And yet without such hypotheses to work with, it seems impossible to marshal the facts together, to investigate their mutual relations, and work onwards towards the discovery of general laws. All we have to do is to employ them sparingly—and to bring them to the

test of experience, whether it lead to correction or to abandonment.

Fifthly. *Psychological* science involves a regular progress from the less to the more general, as in all *physical* science.

The various complex phenomena are compared and analysed. We find certain points of resemblance which run through them ; and this leads us to separate the simpler elements which they contain, and to view them apart, until we are enabled to grasp some of the more general *laws* of mental activity.

Thus it is, *e.g.*, that we arrive at the law of redintegration, or the reproduction in consciousness of all our previous mental impressions. In the same way we find that the law by which similar impressions blend together into more complex facts of mind is one which runs more or less throughout the whole of our mental activity. In fact, all the more general laws of our mental constitution are brought to light in this way ; namely, by analysing the immediate and the *particular*, and rising to the more primitive, and the more general.

Sixthly. In pursuing the course above pointed out, it will not do to *isolate* mental science, any more than we can isolate any other, from the relationship which it bears to all the previous and comparatively simpler branches of inductive investigation.

The distinction between mind and matter has often been supposed to be so fundamental and thorough-going, that no real connexion could exist between the two series of facts ; and that, as a consequence of this, no dependency could be traced between mental and physical science. This delusion has now, however, been fully dissipated. The deeper researches into the physiology of the brain and nervous system, with which recent times have been characterized, have rendered it quite certain that the philosophy of the human mind has the closest points of contact with the science

of all organized and living nature. The analogies between them, indeed, are so great, and the phenomena of mind are known to be so dependent on physical conditions, that it would now be as vain to expect to make any real and substantial progress in psychology apart from physiology as it would be to investigate structural botany without a previous knowledge of chemistry. Mind is the crown and summit of nature, and cannot be reached as a valid branch of scientific research except through the results and teachings of all the lower sciences. The whole of our investigations will tend to show that the science of mind, instead of standing alone, is now prepared really to take its place in the co-ordination of the sciences at large, and only in this way can find a solid foundation on which its whole superstructure may rest.

With regard to the employment of experiment and analogy—we have to note that in mental science the application of experiment is comparatively rare and difficult ; and that, as a consequence of this, we have to make the greater use of analogy. In purely mental operations we are guided mainly by *observation* and *analogy* ; and must, for this reason, proceed with the greater caution and hesitancy in laying down general principles. All I wish here to enforce is, that the comparative want of the power of experimenting does not raise any real barrier between mental and physical science in *relation to method*. In all physical science analogy is a legitimate instrument to employ ; and the more or less sparing use of it must be determined by the nature of the case, and the difficulty which attends experiment.

I. Many systems of mental philosophy have been conducted entirely on the *speculative method*. Wherever investigators have begun by laying down a general conception of mind, and have then proceeded to explain all mental phenomena out of this fundamental idea, we have an example of a purely speculative psychology. This we see in Descartes, in Spinoza, in Wolff, in Hegel, and some other

German metaphysicians. No doubt a sagacious mind may often arrive at valuable conclusions in this speculative way. It is almost inevitable, too, that this speculative mode of procedure should continue longer in mental than in physical science. The reason of this is obvious. All science is made up of two primary elements, viz., facts and conceptions. Thus the fall of a stone to the earth is a fact palpable to the senses ; the law of gravitation is a *conception*, by which this fact, and a multitude of others, is accounted for and explained. Now, in physical science, we can always make a clear separation between the facts and the conceptions on which any branch of investigation is based ; inasmuch as the former appeal to the senses, while the latter do not. But, in mental science, both the facts and the conceptions are to a large extent equally *internal* phenomena ; and it is by no means so easy to separate the real and indubitable *facts* of mind from the acquired notion we entertain respecting them. The difficulty which lies in the way of distinguishing between mental *facts* and mental *theories* has been one of the main reasons why the science of mind has failed to assume hitherto its purely inductive form, and is alone sufficient to account for much of its fruitlessness. Physical science was equally fruitless whilst it laboured under the same difficulty.

II. Most systems of mental philosophy, not fundamentally of a speculative character, have been greatly biassed by pre-conceived notions. For example : firstly, it has not been uncommon in this country for writers on mental philosophy to start with the idea that mind and body are two distinct existences, united for a period, but capable of carrying on most of their functions independently. This conception of the case is not only *gratuitous*, but contradicted by a mass of facts. Whether the conception be found true or not, it must not be laid down *à priori*, as an axiom of mental science, or be allowed to stand in the way of unbiassed inductive research.

Secondly. Writers of another class have gone to the opposite extreme, denying the existence of mind altogether, except as a direct result of certain bodily conditions, and speaking of the brain as being an organ to secrete thought, as the liver is an organ for secreting bile. Here we have another example of a preconceived and, in this instance, materialistic hypothesis, as obstructive to true scientific research as is the hypothesis of dualism we have before noted.

Thirdly. Most of our philosophical writers contemplate *mind* as strictly co-extensive with consciousness, and take no account of what are now termed the *pre-conscious* or latent mental activities. In so doing, a very important and suggestive series of mental facts is kept wholly out of view; the operations of mind in its most primitive and instinctive form are almost lost sight of; and those very phenomena, which are the most illustrative of *mental laws*, are left out of account in our induction of instances. The importance of taking these preconscious states into account will be made more apparent as we proceed.

Fourthly. We may refer here once more to the fixed notion with which so many writers on mental philosophy have started, that there is a certain number of separate, peculiar, and independent mental faculties to be discovered;—a notion which, more than almost any others, has stood in the way of a purely inductive treatment of mental phenomena. To dispossess ourselves of this deeply-grounded prejudice, and enable us to view all mental phenomena as alike evolved from the operation of general laws, is one of the first conditions we have to fulfil, before we can make psychology an inductive science. Had the preconceived notions we have indicated been employed merely as *hypotheses*, to aid investigation, instead of *axioms* to which all observed facts must conform, there would have been nothing strictly unscientific in their admission; but, as *obstructive prejudices* at the threshold of philosophical research, they retard discovery,

and justify the reproach of fruitlessness so often laid to the charge of mental investigations.

III. Mental philosophy has not had to suffer merely from the tendency to admit speculative ideas ; it has also had to suffer from the very opposite cause, namely, from a too exclusive attention to facts, and the consequent treatment of the whole *science* of mind as though it were merely a branch of *natural history*.

The difference between a mere natural history or classification of phenomena, and a truly scientific or analytic treatment of them, is as easily seen in connexion with any other of the sciences, as it is in mental science itself.

Thus botany, regarded as a natural history, simply observes, collects, describes, and classifies. It exhibits to our view all the *kinds* of vegetable growth, decides on some definite principle of scientific arrangement, and then, by due observation, places all the known plants under their proper class and order. Very different from this, however, is structural botany, viewed as a science, standing in due co-ordination with chemistry and physiology. Here the primary object is not classification, but analysis. The chemical elements of the plant, the process of its development, its nutrition, growth, respiration, reproduction, together with its manifold analogies with the rest of the universe, are here consecutively shown. This gained, the plant is analyzed as well as classified ; we have a scientific comprehension of it, and we know its physiology and mode of development, as well as its place in a mere artificial arrangement.

Precisely similar to this is the difference between a natural history of mental phenomena and a philosophical analysis of the human mind. While the one only observes and classifies phenomena, the other traces them to their elementary forms, shows the links of connexion between the more simple and the more complex states,—elucidates the origin and growth of our ideas, shows the physiology of thought and feeling,

follows the development of mind through all its stages, and thus arrives at the universal *laws* of mental operation.

A large amount of the mental philosophy which has been current both in England and Scotland since the time of Reid has been simply of the character of a *Natural History*. A great number of useful observations have doubtless been made and recorded, but the whole has amounted to a preparation for a philosophy rather than a philosophy itself. Besides a mere inventory of facts, classified under their respective heads, we want such an *analysis* of those facts as shall discover the laws of mental activity, and enable us to trace its development.

We have now laid down, I trust with sufficient clearness, what the problem is which we propose to investigate, and what the method by which we shall endeavour to solve it. We have to investigate *man* as a living, instinctive, active, feeling, and thinking being. In doing this, we have to take in the whole range of facts presented to us by human nature, and to discover, if possible, the laws by which these facts are regulated. With regard to the *method*, we have to lay aside all preconceived ideas in relation to the nature and attributes of mind, and proceed from the known to the unknown by induction.

CHAPTER II.

THE FACTS OF PSYCHOLOGY.

PSYCHOLOGY rests upon a basis of *fact*. It will therefore be necessary for us to take a general view of the field of observation within which these facts lie, and to point out the different sources from which they are derived.

I. First come those facts which every man possesses within himself—facts which belong to him *as a man*, and which form the universal human element of his constitution. Regarding man as a whole, we see two sets of functions, viz., *physical*, relating to life, and *mental*, relating to consciousness. The science which investigates the former we term physiology, that which investigates the latter we term psychology. Yet, distinct as these two series of phenomena *seem* to be at first sight, on closer inspection they draw nearer and nearer together, until we find it impossible to trace a clearly defined line of separation.

Every bodily function can, under certain circumstances, become converted into a fact of consciousness. Thus, the derangement of any bodily organ will at once produce a feeling of unpleasantness, *i.e.*, will translate itself from a physical into a mental fact; the laceration of a nerve is a *bodily* injury, but is instantly converted into conscious suffering; we may be conscious, under certain circumstances, of the beating of the heart and the play of the lungs; nay, even the whole bodily state of the moment produces a corresponding mental condition, which we term *coënaesthesia*, or common

sensibility. Conversely, our mental conditions impress themselves on the body. Thus, pain produces contortion ; anger, paleness ; shame, blushing ; and a number of the ordinary physical functions are stimulated or retarded, aided or deranged by purely mental influences. The mere thinking of certain fluids, such as lemon-juice, will promote the formation of saliva ; anger generates gall ; a vitiated atmosphere during sleep will affect the lungs, then the blood, and lastly the mind, producing restless and frightful dreams.

So far, again, as we have any insight into the working of the nervous system, the connexion between its different states of exaltation or depression and corresponding states of mind is as close as it is possible to imagine ; and if we could look into the interior of the brain, and watch its molecular changes, we should probably find that some peculiar alteration of the tissue takes place corresponding with every thought and volition which we experience.

In every instance above-mentioned, we might, of course, separate the facts of the case into two series of phenomena —the external and visible changes on the one side, and the internal or conscious experiences on the other ; assigning the one series to the physiologist, and the other to the psychologist for investigation. But who would not feel that this mode of procedure is artificial, and that, if we would investigate the facts of human nature successfully, we must investigate them, not in their separation, but in their entireness ?

In addition, however, to the popular view which we have just given of the close connexion subsisting between mind and body, physiology has succeeded in obtaining a far more accurate and precise conception of the interworking of the mental and bodily forces. There exists in connexion with our physical constitution an unseen power which is termed *vital force*. This power, though unseen, we know well by its effects. When it is strong within us, then life is abundant, and health is vigorous. It gives vigour to the

limbs, lightness to the spirits, energy to the frame. It supplies the "vis medicatrix" of the physician, and the overflowing "animal spirits" of the youth; while the *want* of it is seen in languor, depression, incapability of rallying from sickness or suffering, and finally in decline and death. It is this same vital force which carries on the process of cell-formation in the *structure* of the human frame, which produces the normal changes in its tissues, pervades the blood in its circulation, and aids nutrition, absorption, and assimilation. What this vital force consists of—whether it be a chemical agency, or magnetic agency, or spiritual agency, or something quite distinct from all the physical or mental forces, and peculiar to organized living bodies, we do not presume to determine. Whatever be its nature, it has a real existence.

But there is another force, in form distinct from the vital, which also plays its part in the animal economy, and this is *nerve-force*. It is a fact well ascertained, that the ganglionic masses of the nervous system have the capacity of originating a certain *nervous-power*, which manifests itself through a great variety of phenomena. All the modes of sensation are produced by nerve-force, excited mostly by means of external stimuli at the extremities. And, in like manner, certain sensational ganglia and the grey matter of the spinal cord develop another distinct form of nervous energy, which imparts *motion* to the whole muscular system. Thus, then, it is what we term *nerve-force* which, on the one hand, imparts all the capacity we possess of receiving impressions from the outward world through the senses, and, on the other hand, enables us to react upon the external world by means of motor power applied to the muscular system. In a word, all sensation and all motion, whether reflex, or volitional, is rendered possible only by means of this *nervous energy*.

But there is also a *third force*, different in many respects

from the other two, and that is, the force of *mind*, which includes *will*. Intellectual and volitional energy play their own especial part in the human economy, and originate a series of facts different in almost every respect from those connected either with the vital or the nervous system. The distinctive property of consciousness here first comes into operation, and separates the results of mind-force by a sufficiently broad line of demarcation from the peculiar results of the other two agencies.

Now, these three forces (vital-force, nerve-force, and mind-force) stand in the closest correlation. Modern investigations in natural science have brought clearly to light the truth, that the varied *physical* forces of the universe (such as gravitation, mechanical power, heat, light, electricity, magnetism, &c.) may, with very few exceptions, be transformed into each other. Thus, heat applied at one end of a steam-engine goes off in the form of motive power at the other. Conversely, mechanical power, if suddenly arrested by strong friction, instantly generates heat. No particle of *force*, in fact, which the universe contains is ever lost, any more than a single particle of matter; it only translates itself from one form of activity into another.

Physiology, then, applying this doctrine of the transformation of forces to the different powers connected with the human organism, has demonstrated, that a similar correlation exists between vital energy, nervous energy, and mental energy. Thus, it is the vital energy in the blood which supplies the pabulum to the nervous system. We have all of us, for example, experienced the depression of nervous energy which ensues when the vital power is lowered through exhaustion or disease, and the revival of it when the physical powers are refreshed and restored. In the same manner as vital supplies nervous power, so, also, does nervous energy excite mental activity. For all mental activity is dependent organically upon the brain; and it

is by the changes which take place in the tissues of this great central organ that mind-force is excited and maintained.

Conversely, when the will first comes into operation it acts upon the nervous centres, and gives rise to motive power; and, when the intellect is strongly taxed, not only do we experience a fatigue arising from the expenditure of nerve-power coincident with it, but a disintegration of the nervous tissues is probably indicated by the redundant amount of alkaline phosphates in the urine, so often ensuing upon it. We need only mention further the well-known influence exerted by the nervous system upon the vital functions, and the power which a greater or less degree of nervous force has to heighten or to depress the whole tone of bodily health, and the circle is completed, the connexion of the three agencies being determined through the whole series.

This doctrine of the correlation of the three sets of forces shows us clearly how impossible it is to isolate mental facts from those of the nervous and vital system. It points rather to the deeper truth that there must be at the root of them all a *unity*, out of which they alike spring.

II. The second class of facts to which psychology can have recourse with advantage are those of *mental pathology*, i.e., the abnormal phenomena of the human mind. Just as physiology is often indebted to disease for illustrating the proper functions of the vital organs, so, also, can psychology learn important lessons from perverted or diseased mental action. Many truths respecting the various parts of the nervous system, and their separate functions, have been either brought to light or finally *established* by means of diseases, mutilations, or natural imperfections in this part of our animal economy. Thus we find that, when the nerves of *motion* are paralyzed, those of *sensation* often

remain entire, and *vice versa*; that reflex action will continue unimpaired when consciousness is entirely destroyed; that undue excitement of the nerves will produce ghost-seeing, and other collateral phenomena; that the loss of one or more of the senses affects the regular growth of our ideas, and that we may watch the process by which the want of any one of the natural organs of communication with the external world is supplied by the increased intensity and extraordinary development of the rest; all which species of facts become highly instructive in relation to the study of neurology, and of mental development generally.

Insanity, again, frequently throws light upon the play of the mental faculties, inasmuch as it gives real examples of cases in which one set of functions is perverted, while others are wholly unaffected, and thus enables us to judge of the *relative dependence or independence* of one upon the other. It is hardly necessary to add how suggestive actual cerebral diseases often are, in relation to the function of *different portions* of the brain, and its ganglionic accompaniments. Lastly, all those abnormal phenomena which are grouped together under the names somnambulism, electro-biology, clairvoyance, and mesmeric states, generally give us a remarkable insight into the *instinctive operations* of the nervous system, and the power which ideas exert over the physical functions of the body.

III. A third class of facts, bearing closely upon many points of mental science, are the facts of *comparative psychology*.

Much instruction may be obtained by comparing the nervous system of different classes of animals with their mental manifestations. Every kind of animal is found to have a nervous system, apparently corresponding with its particular point of development in the scale of intelligence, and observation of the habits of such animals will often

enable us to distinguish *in man* what is merely automatic and instinctive, from those actions which are performed with intelligence and volition.

IV. There is yet one other class of facts of great importance to the psychologist, and those are the *results of mind*, as seen in language, manners, beliefs, and in human history generally.

PART I.

ON THE PRIMORDIAL FORMS OF
MENTAL ACTIVITY.

CHAPTER I.

FUNDAMENTAL DISTINCTIONS OF VITAL PHENOMENA.

WE have already explained the method to be pursued in the following treatise, and taken a general survey of the field of observation within which the facts lie.

Taking the synthetic method as that best adapted to our purpose, we must, in order to begin with the elements, go first of all to the very primary phenomena of *life*, and attempt to show the boundary line which separates the world of dead, unorganized matter from the world of life and organization. We have already pointed out the impossibility of drawing any exact limit between the vital and the spiritual facts of our nature. Vital-force, nerve-force, and mind-force are all correlated, and all unite in the one property of bearing upon them the common mark of *design*, of *purpose*. It is the vital power, however, which appears *first* in the history of the individual; and it is out of this, as the germ, that all mental phenomena are evolved. We are referring, of course, now, simply to the apparent order of events, without intending to convey any theory as to the actual priority of *mind* or *organization*. Taking this order as representing the facts to be dealt with, we have presented to us, *first*, a being manifesting vital properties only; next to this we see the nerve-force appearing in the double phenomena of sensation and motion; and then, lastly, out of these we see consciousness and intelligence gradually evolved.

To find, therefore, the *most* elementary facts of mind, we must consider what is the common and universal characteristic of *life* in its widest acceptation. By doing so, we shall be, in fact, isolating from the whole universe of phenomena around us something which remains throughout *fundamentally distinctive* of every individual, of which the term *life* in any sense whatever can be predicated.

1. The first fact, then, to which we refer, as common to all animated beings, is the manifest tendency to *individualization*. Looking at the material universe as a whole, we find a vast variety of substances, some, as far as we know, elementary, and others compound. Unorganized masses, however, do not form *a unity*, in which each part is subservient to the whole. Every stone we tread on is *a portion* of something else; every drop of water is a part of the ocean; every mountain is but a fraction of the earth's crust. Here, then, are no individualities, but simple *fragments*. The moment, however, that organization commences, we trace at once a tendency to individualization. This is seen, though imperfectly, in the vegetable world. The seed is, in a certain sense, a unity, and the plant is a unity. The unity of the plant, however, is not persistent and complete, inasmuch as the whole essence of the plant appears to exist in every part. Cut off a small portion from it, and it will produce a new plant, and a new individual. The tendency to individualization only becomes *perfect* in the *animal*. Here we have, strictly speaking, a unity,—one in which the well-being of every part absolutely depends on the well-being of the whole,—one whose unity can never be *destroyed*, and never *reproduced* when the individual has once perished. Every animal existence thus stands forth as something distinct and separate from the world of nature around, and possessing a *living force* of its own. To merge again into the elements of nature is *death* to the individual. Moreover, the higher

in the scale of being any individual rises the more marked and distinctive is its individuality. In civilized man, every individual is well nigh as different from every other as though each belonged to a different class; and the higher the mental development, the more expressive becomes the individual character. We must regard the tendency to individualization, accordingly, as one of the fundamental phenomena in the whole region of vitality,—one, too, which increases in proportion as life rises into its higher and more perfect forms.

2. A second *fundamental* fact we have to notice in the nature of living beings is their dependence upon the physical forces by which they are surrounded. In this respect they differ essentially from things without life. Inorganic substances, which have no individuality, are independent of every thing else. They maintain their passive existence without sensible change, and need no obvious support from without. Living beings, on the contrary, *notwithstanding* their individuality, are absolutely dependent upon constant supplies from the world at large. According to modern physiology, the vital forces in the human frame stand in close correlation with the physical forces of the universe, and derive from them their hourly sustentation. This same principle of dependence we see to pervade every stage of conscious existence, appertaining alike to every *form* in which life and consciousness exhibit themselves. Vital force depends upon the surrounding elements of nature for nutriment and support; nerve force, in its turn, is supported by the vital force. In addition to this, it is also acted upon *directly* by stimuli from without, and only by means of such stimuli is enabled to perform its proper functions. Without light, *e.g.*, the eye could not see; without an atmosphere, the ear could never hear; without its proper impulses, not one of the senses could carry out its purpose in the animal economy. Lastly, mind-force must

be excited and maintained by the nerve-force; and thus it also *indirectly* derives its energy and vigour from the influences of the outer world.

Thus, life itself, in whatever form, is a lamp that is perpetually burning out, and which needs, therefore, to be perpetually sustained. Every living being is placed in the midst of a system of things which is perfectly adapted to it, as it is to them. If no stimulus from without act upon it, its powers can be neither developed nor sustained. Just as the plant requires air, sunshine, moisture, and nutriment from the soil, so also does every other kind of animated existence live in an environment of physical influences, to which it must adapt itself, and by which alone life can be regularly kept up and brought to its full maturity.

3. Another universal fact in relation to all organized existence is that of *growth*. Nothing that possesses life is created *perfect* and *mature*. It appears first as a germ, in which none of the developments of the *perfected* being are in the least visible. The seed-germ of the plant is sometimes said to contain the plant itself *potentially*, and the cell-germ of the animal to contain the future animal *potentially*. All that can be meant by this is, that there are certain *powers* inherent in the germs both of the one and the other, which, when subjected to the appropriate stimuli, gather nutriment from the material that surrounds them, set in motion a process of development, construct the organs of the future being, one after the other, and thus complete the destiny of the individual which it has all along represented. The structure of the human body, like all others, is produced by a regular system of growth. The first appearance of it is in the form of a *single cell*, which goes on weaving the tissue of physical existence by means of a regular process of nutrition from without, and plastic power within, until the whole *organism* is complete. The same process of growth takes place whether the organs are those which are more directly

connected with the *vital*, the *nervous*, or the *mental* forces ; and the facts of the case are in each instance equally decisive as to the *progressive* manner in which the organs grow up to maturity, and the functions they perform are developed. The powers of the body, the energy of the nerves, and the faculties of the mind, grow up as nearly as possible *concurrently* ; so that, in what physiology teaches us respecting the growth of the vital organs and the nerves, we have, to say the least, an *analogy* by which we ought to gain some insight into the *laws* of mental development also. Thus, to sum up the whole in a single sentence, individualization—nutrition—growth—these three appear to be the universal characteristics of all things which possess *life*, in whatever way that life may manifest itself.

Now, let us see if we can *combine* these distinctive attributes of vitality into *one* idea, so as to bring to light some general fact or law which may be applicable to the *whole* sphere of organic existence. The first attribute we mentioned was the tendency to individualization. This is, in other words, the power of *self-maintenance*, the capacity of *resisting* and *repelling* all which would otherwise tend to disintegrate the organism, and reduce it to the common elements of nature. The second attribute was the dependency of all organic and living existences upon the physical forces around them. This is, in other words, the power of attraction and assimilation, the capacity of *selecting* what is conducive to life and well-being from nature, then of appropriating and incorporating it, and lastly, by this means, of making it part of our own individuality. The third attribute was that of *growth*, which is a process in which both the above-mentioned powers are *combined* ; for in growth we see the development of the individual, as an individual, carried on by means of nutrition drawn from without ; continued life resulting from a balance, as it were, of these two forces.

We find, accordingly, that there are two great facts or laws

pervading the whole sum of organized and conscious existence, the law of attraction and the law of repulsion,—the law of *assimilation* and the law of *separation*. We see this in the plant. The elements of nature perpetually act upon it, and would soon absorb all its sap if left to the natural operation of the physical forces. But the *vital* principle *reacts*, and converts those very physical forces, which would otherwise consume it, into nutriment and health. The case is the same with animal existence. Here, in connexion with the vital-force, we have the power of assimilation on the one side, drawing from external nature everything that is necessary for support, for growth, and for continued existence, and the powers of repulsion, of secretion, and of excretion on the other, which avoid, throw off, and eject everything prejudicial to life, everything, therefore, which would interfere with the maintenance of the being's individuality, or cause it to return to the unorganized elements of nature.

Rising from the vital to the nerve-force, we find here, also, the same twofold law in operation, for all nervous processes are carried on by the double power of action and reaction. Every nerve of special sensation has the property of assimilating and propagating certain impulses from without, and then of exciting a reactive force, which expends itself in motion communicated, and repulsion effected in reference to the world without.

And then, lastly, we find the same law, in another form, pervading all the operations of the mind-force, from the lower instincts up to the highest exercise of reason. For what is instinct but the power of adaptation to external circumstances, *i.e.*, of selecting what is conducive to well-being, and repelling all that is noxious to it? And what is *reasoning* but the power of separating and distinguishing, as a necessary preliminary to the assimilation and complete appropriation of *truth*? To point out all the different forms, however, in which this twofold law works throughout the whole economy

of living nature, would be to anticipate much of our succeeding analysis. We must content ourselves at present with having indicated it as the most general, universal, and fundamental fact of *life*, whether physical or mental.

Doubtless, this law of action and reaction may appear at first very vague and abstract, but so, in truth, are all facts which claim a high degree of generality. The laws of attraction and repulsion, as applied to the material world, appear very vague and abstract generalities; but we may follow their working into the smallest details, and show how the same principles by which the planets revolve in their courses really determine the forms and movements of every material existence, and shape the minutest conveniences of our daily life.

So it is with the fundamental laws of the human mind. Once grasp them, even in the form of bare generalities, and we may soon find that they carry a light with them, more or less, into all the operations of the soul, and connect together facts and phenomena which seemed before wide as the poles asunder.

In fine, the double law of mind, which we have just explained, answers almost perfectly, in its particular sphere, to the universal law of gravitation in the world of matter. And, just as the latter gives us the key to a vast number of physical facts, so shall we find that the former will enable us to track our way through some of the most intricate paths of mental philosophy, with the light of a universal principle to point out the right way.

CHAPTER II.

CONSIDERATION OF THE POINT AT WHICH THE MENTAL PHENOMENA DIVERGE FROM THE PURELY VITAL.

THE common ground where the physical and the mental unite is the *nervous system*. The nerve-force is connected sometimes with the lower or physical processes, as when it assists in the motion of the heart or lungs ; and sometimes with the higher or mental processes, as when it produces sensation, or aids us in executing our volitions. The point which we require to find (that, namely, at which the mental phenomena diverge from the purely physical) is exactly the moment in which the nervous system ceases to subserve purely internal processes, and points to some object apart from ourselves. We cannot say, indeed, even when this point is found, that there is more *intelligence* directly manifested in the one form of nervous activity than the other. We call the act of eating a voluntary process, while the act of digestion is pronounced a physical or vital one ; but the nerve-force which subserves the one is as much adapted to accomplish a purpose as that which subserves the other, and we are equally impelled to both by instincts and wants over which we have little or no control. Just so with regard to the organs of the body. The organizing power by which they are produced is termed vital, and the free use of those organs when produced is termed mental ; but there is as much intelligence displayed in the construction of the organs with a view to their future use as there is in the use of them itself.

The division, therefore, which we now make between the vital and the mental is, after all, *arbitrary*—as far as the real character of the nerve-force, which is active in both cases, is concerned. It simply subserves a convenient purpose to make *some division* between them; and that division is pretty clearly marked by saying that the nerve-force is termed *vital*, so long as it is wholly subjective and internal; but that we term it *mental* so soon as it takes us out of ourselves and connects us with the objective world.

To determine, then, the point at which the nerve-force begins to assume its higher or “mental” form we must take a general view of the nervous system itself, and its ascertained functions, referring the reader to the standard works on physiology, if he wishes to know the details of the subject, and to trace their verification.

There are two different kinds of nerve matter, distinguished first by their colour—the one grey, the other white; and secondly, by their structure—the one composed of a cellular substance, the other simply fibrous. To all the different masses of the grey or cellular matter we give the common name of *ganglia*; and it is apprehended that these ganglia are the originators of all functional changes, while the fibrous threads are supposed merely to connect the several functions one with another.

Now, the first portion of the nervous system to which we have to refer, is that which is termed the *sympathetic system*. The sympathetic nerves are largely distributed throughout the body, branching out from two regular chains in front of the vertical column, and especially accompanying the blood-vessels. There is every reason to believe from observation and experiment, that these nerves have especial reference to the *vital* functions, *i.e.*, to the circulation of the blood—the process of nutrition—and to the various secretions of the body. Here, then, there can be no question of mental force, properly so-called; all is as yet purely subjective and physical.

Tracing, however, the functions of the nervous system upwards, we come next to the great discovery of Sir C. Bell, namely, that, besides the *sympathetic* system, there are two other distinct systems of nerves subserving two distinct purposes; I mean the nerves of *sensation* and the nerves of *motion*. The nerves of sensation have been appropriately termed *afferent*; they are those which bring impressions to us from the world without, and make us cognisant of all the affections to which the body, in its external relations, is exposed. The nerves of motion, which run, for the most part, *side by side* with the others, have been termed *efferent*. They are those which convey the impulses emanating from the various centres of nervous activity to all parts of the circumference, and thus enable us to move the different portions of our frame at the behest of instinct or the will. These two classes of nerves thus form one complete organ for producing action and reaction between ourselves and the world without.

To this great spinal system are superadded, lastly, the cerebral hemispheres. By means of these, two further results are secured; first, the outward impressions conveyed by the nerves are elaborated into ideas; and secondly, the voluntary acts originating within are carried into execution through the motor system. We may regard, therefore, this whole crano-spinal apparatus as being, *par excellence*, the organ of what is peculiarly termed *mind-force*,—the intelligence being represented by the sensational system and its cerebral developments, the will by the motor system and its excitants. The natural history of the development of this entire system will, accordingly, be precisely correlative with the history of our mental development; its highest acts will stand correlated with our highest mental processes, and conversely, its lowest or primary acts will be exactly parallel with the first expression of mind-force in the growth of the individual. Here, then, we have a clue to the solution of

the problem started in the present chapter, namely, the determination of the point where the mental phenomena are first seen to emerge from our physical life. For, as the whole of the cranio-spinal system is constructed in reference to our converse with the outer world, containing a complete machinery for action and reaction between self and nature, the first movements of this system in carrying out its proper functions will be the first act of mind-force properly so called.

It was long a current opinion that the brain was the one great central moving organ of the whole nervous system, and that all the other ganglia were but collateral and subordinate to it. It is now known, however, chiefly through the results of comparative physiology, that the root of the nervous system is rather in *the spinal cord*, with its various ganglionic enlargements; and that there are no less than three independent centres of nerve-force. The first of these centres is the spinal cord itself. If the encephalon of a frog be severed from the spinal cord it is found that, on exciting certain nerves at the extremities, the animal will begin to hop exactly as if it were whole. This shows us that in the frog at least the spinal system forms a distinct centre of nerve-force; action and reaction taking place without any communication whatever with the brain. Dr Marshall Hall, led on by experiments of this kind, succeeded in *demonstrating* that the spinal system *in man* is likewise an independent centre of innervation, and that numerous actions take place by means of motor impulses originating there, in which the consciousness has no part whatever. To such actions he gave the name of excito-motor.

Secondly. It will be within the experience of every one that there are various actions we perform instinctively as the direct result of some sensation. A sudden flash of light will often superinduce sneezing; the sight or smell of anything disgusting will produce nausea and vomiting; tickling in some parts of the body will produce inordinate laughter, or

impel the hand to the spot to prevent the effect. These actions are closely connected with the nerves of special sensations. As these nerves terminate in ganglionic centres at the base of the brain, so the corresponding reactions must obviously emanate from the same point. To distinguish them, therefore, from the mere excito-motor impulses, they have been termed sensori-motor actions. The peculiarity of the phenomena emanating from this portion of the nervous system is, that, while they are performed consciously on the one side, yet they are uncontrolled by thought or volition on the other. They realize, therefore, the exact idea we form of instinct. Those animals which, like the bee, have the instinctive life very remarkably developed, possess a large formation of sensory ganglia, with little or no brain properly so-called. The law of their action is written, as it were, upon the very material and structure of the nerves, which only need an appropriate impulse from without to produce movements which have all the appearance of forethought, of adaptation, and of volition, while, in reality, they are simply reflex actions of the ganglia. Many of our own actions are precisely of a similar kind. The whole of the sensory ganglia, with their motor reactions, form, in fact, a kind of automatic apparatus, which may be set in motion either by impulses from without, or by ideas working down upon them from within.

Thirdly. A vast amount of experiment has all tended to show that the brain, properly so-called, is concerned physiologically with that entire series of intelligent and voluntary acts which peculiarly distinguishes man from the rest of the creation around him. An impulse from without reaching the brain produces, not a *sensation*, but an *idea*; and the reaction which originates there, is one which is not only accompanied by consciousness, but is usually the direct result of a thought or a purpose, and carried out by virtue of a distinct act of the will.

Thus, then, we see that there are three great centres of

nervous activity, corresponding with three great classes of phenomena. There is the spinal system, which is adapted especially to the production of involuntary muscular motion ; the sensorial system, which subserves sensation, instinct, and all the actions which are not under the control of the reason or the will ; and lastly, the cerebral system, which stands, physiologically speaking, parallel with the phenomena of thought and volition.

Of these three centres, the first is lowest in the order of mental development. It occupies, in fact, a sort of middle ground between physical action on the one hand, and what we term *mental* action on the other. Every reflex act deriving its stimulus from the spinal cord is so far a mental phenomenon, that it points with evident design to something external which affects us, and towards which the involuntary movement is directed. On the other hand, it is so far a *physical* act, that it does not awaken the consciousness, or put the *cerebral* system in operation. We may consider, therefore, the excito-motory reflex actions as the first effort of the nerve-force to pass over from its physical to its mental form. They thus show us the transition from the *vital* force by which the organs are *constructed* to the *mind* force by which they are put to an intelligent *use*, forming, as it were, the first elements of teleological activity which nature has placed at our disposal, and to which she has committed the important function of self-preservation, when the mind is unable to watch over our safety by its own conscious efforts. And there is this important principle involved in them, that consciousness is not a *necessary*, though it is a *usual* accompaniment of our mental operations. The laws of the reflex actions are evidently impressed upon the very structure of the ganglia, and operate when we are wholly in an unconscious and involuntary state in relation to them. This principle—that of preconscious phenomena—we shall find, as we proceed, to be of very great importance in the economy of the human system.

CHAPTER III.

PRECONSCIOUS MENTAL ACTIVITY.

THE Cartesian philosophy started from the idea, that *Thought* is the ground and proof of existence—"Cogito, ergo sum." This principle naturally led the school to which it gave rise to regard *consciousness* as wholly inseparable from mental activity. The same principle passed, through Locke, into the modern English school of metaphysics, and became a fixed idea with nearly all English writers on mental philosophy down to comparatively recent times.

On the Continent, and especially in Germany, another and altogether different course was pursued. Leibnitz denied the Cartesian dogma *ab initio*, and maintained the doctrine of unconscious perception, or latent thought, as a fact which can be verified throughout all the stages of animal life, and in the actual operations of the human mind. From him the idea of unconscious intelligence passed into the principal systems of modern German philosophy, so that the conception of *thought* being embodied in the various operations of the natural world, and gradually rising higher and higher in the scale of existence until it appears in the form of self-consciousness, is one quite familiar and quite current amongst the German philosophical writers.

More recently, the idea has been revived in this country. It formed, for example, an important element in the lectures of Sir W. Hamilton, and thus gained currency in its purely

psychological form. On the side of physiology, the same doctrine was brought forward by Dr Carpenter, under the title of unconscious cerebration ; and was pointed out also, quite independently, by Dr Laycock, as being an example of the “*reflex action of the brain*.”

Following the method we have already laid down for our guidance, we shall now attempt to bring together the main *facts* of what has been termed *latent thought*, and see if we can trace it by the light of analogy from that lower region of mind, where it is easily known and ascertained, up to its more recondite and less explored forms.

1. We will begin with the very obvious and well-known fact, that an idea, once realized, may exist either *in* or *out* of consciousness, and that a faculty, once acquired, may at any moment be either *in* or *out* of exercise. Thus, when I have acquired a certain amount of mathematical knowledge, I am quite sure that the truths involved in it exist *tacitly* in the mind, though I may be utterly unconscious of them at this particular time ; and so, also, when I have once learned to speak a foreign language, I can depend upon the power of doing so continuing to exist, though I may have no opportunity at present of exercising it.

It is by no means a *necessary* condition, however, of our possessing either ideas or capacities of action in this *potential* form,—that we should have any certain knowledge or consciousness of their really existing within us. Frequently, when we have not had recent opportunities of reviving a train of ideas, or exercising a faculty, we feel uncertain whether we may not have lost them altogether, or, at any rate, lost the power of recalling them *at will*. And it is only after making the attempt, and practically *testing* this power, that we feel sure whether we are really master of them or not. So far, then, as ordinary ideas and capacities are concerned, there is no doubt but that they may all exist in a latent state within us ; nay, that all our mental acquirements *do so exist*

whenever they are not the immediate objects of our consciousness.

2. But now, secondly, we can go a step further in the doctrine of *latency*, and show, by a large array of facts, that latent powers exist within us, and can be aroused under peculiar conditions, of which we have *ordinarily* no knowledge, and over which we can exercise *ordinarily* no voluntary control. With regard to ideas and trains of ideas in the memory, there are numerous examples on record in which an astounding revival of them has been brought about, after every trace had long disappeared from the consciousness in its ordinary state. For example, persons in fever or delirium have been known to speak languages which they had long forgotten; old people, whose memory of recent events is almost obliterated, experience a perfect revival of the scenes of their youth; in moments of extreme danger, the events of a whole life will seem pictured before us with all the vividness of reality.

Again, with regard to powers of action,—unknown capacities are sometimes drawn forth by peculiar physical conditions. This is constantly witnessed in somnambulism, in mesmeric sleep, and in other analogous states of body. Powers of acting, of imitation, of verbal expression, of command over the muscles, the limbs, the voice, and even the vital functions of the body, are developed under these conditions, which far transcend anything of which the person is capable in his ordinary volitional state. All this betokens a vast amount of *latent* power, inaccessible to the ordinary control of the will.

Once more, it may be shown that there are latent powers or tendencies which have been *inherited*, and which often remain unknown until brought out by peculiar circumstances. A familiar example of this may be seen in the young pointer. The habit of pointing at game is originally an acquired one; but so strong does this habit become seated *in the race*, that the very first time the young pointer is taken into the field,

he will stand and mark it, thus developing an instinct which is not *original*, but yet becomes after a time hereditary. Exactly in this way we find in man peculiarities of mind, temper, thought, habit, volition, &c., appearing and reappearing in families and races.

3. But, thirdly, another question arises:—How far is it demonstrable, not merely that we possess latent germs of thought and action within us, but that *mental processes* themselves take place without any consciousness of them whatever? Many facts concur to prove that they do. We shall mention a few of the more obvious examples.

First. After puzzling over a difficult problem a long time, and leaving it unsolved, we not unfrequently find, on taking it up again, that the materials have rearranged themselves in our minds, so that the solution is perfectly easy. The process by which this has taken place lies, of course, altogether out of the light of consciousness. Secondly. One idea will sometimes suggest another, which had, as far as we know, no previous connexion with it. Thirdly. *Habits*, when fully acquired, will come into operation, under proper circumstances, quite unconsciously. A good performer on the piano will play admirable music when his mind is wholly occupied with other subjects of thought or conversation. The mental process which directs his fingers, we again conclude is a latent one. The very same phenomenon happens in the case of all *occupations*, when they have become by practice purely mechanical. Fourthly. Cases of this kind often occur. We write a letter and despatch it. Two or three days after we remember that we have made an error in the statement, or spelt a word incorrectly. At the time, the error was committed unconsciously; by a latent process that error is brought, perhaps, some days after, into the sphere of consciousness.

We need not multiply further examples of a fact which, perhaps, is already sufficiently obvious; but shall next

attempt to look at it more closely, for the sake of analysis and explanation.

First of all, it is evident that, in cases of revived impressions, such as those above stated, there is some peculiar form of vital action going on internally, with which the revived ideas or trains of ideas are in some way connected.

Secondly. It follows from this that there must be certain vital changes which *correspond* with mental ones,—so correspond, that, if the former are superinduced by external circumstances, the latter will come with them into the light of consciousness, quite independently of any volition of our own.

Thirdly. These vital changes, however, may exist, and may affect the nervous system without awakening the consciousness at all; so that nervous action, *representing* intelligent ideas, and actually stimulating us to teleological activity, may take place within us while the consciousness is wholly insensible to it. Most of the cases above mentioned are examples of this fact.

Fourthly. It follows, still further, from this, that there is a *latent* intelligence within us which works teleologically, apart from will, feeling, sensation, or any kind of consciousness whatever; and this it is which we now designate as *preconscious* mental activity.

With this truth, then, in our hands, we can now trace our way back to the sphere of preconscious action with some degree of certainty. We can understand, for example, that if, previous to the actual development of consciousness, there is no *explicit* intelligence evolved, still there may be internal changes going on within us, which *correspond* with certain states of consciousness as yet unrealized, but which may hereafter be unfolded.

For example: if we go back to the verge of unconscious life—I mean to the first days of infancy—we find a number of actions performed of a purely instinctive nature, which

show, in their adaptation to certain ends, that there must be an intelligent principle within, which impels and shapes them. The winking of the eyes—the contraction and extension of the limbs—the action of the mouth in seeking the appropriate nutriment, and many other similar instinctive movements, all prove that there are teleological changes going on *internally*, altogether anterior to consciousness,—changes out of which consciousness itself has to be gradually evolved.

Let us, however, go one step further back still, and look at the embryo man during that state in which the organism is building up, the instruments of future use preparing, and the forms of beauty inherent in the human frame being sketched out by the inward unconscious artist. All these effects we now know, by the light of physiology, are produced by the continued repetition of that primitive act by which the primary cellular tissue is constructed. By what power, then, is this act impelled and sustained? The only inference we can possibly draw is, that these preconscious activities are carried on by virtue of an inherent principle of intelligence.

Thus, by tracing the evidences there are in man of *unconscious* mental activity; by showing that we have instances of it in the case of habits, secret associations of ideas, mechanical and instinctive actions, &c.; by discovering in this way, that the intelligent principle within us is independent of consciousness, and can operate by its own laws, whether in the light of consciousness or out of it; we are enabled to carry the analogy up to a *preconscious* era of our existence, and conclude that there are mental activities analogous to these going on even in this early period of our being, out of which activities consciousness itself is at last evolved.

One important conclusion can be drawn from this, namely, that the human mind is *not a tabula rasa*, upon which experience has to write all the characters. Every individual has

his own distinctive type ; brings with him into the world mental tendencies and characteristics, derived from his parents and ancestors ; possesses vital substrata, which operate prior to consciousness altogether ; exhibits the working of inward teleological forces which bear the stamp of individuality before the conscious reason is awakened, and impress that stamp thus early upon an organism framed to correspond perfectly to the soul, of which it is the instrument and the habitation.

CHAPTER IV.

PRIMORDIAL MENTAL ACTIVITY ACCOMPANIED WITH CONSCIOUSNESS.

IN the preceding chapters we have shown that every development of mind-force, as far as our experience goes, is connected with the crano-spinal system—that this, in fact, is its material organ. We have also seen that within this system there are three centres of nervous action, each of which is marked by certain peculiarities of its own. The lowest of the three is the spinal cord, in the reflex actions originating from which we recognised the first rudimentary efforts of the nerve-force to subserve other than mere physical processes. The teleorganic principle within us, having hitherto presided over the formation and development of the organs, shows, in these so-termed excito-motor actions, the first tendency to direct us to their proper use in relation to external objects. Here already we have the law of action and reaction in its higher form—the action of the world upon ourselves, and the reaction of ourselves upon the world, but as yet wholly unaccompanied by consciousness.

The second centre of nervous action is found in the mass of ganglia lying at the base of the brain. It is here that all the nerves of special sensation terminate; here, accordingly, that we may locate what has been termed *the sensorium*. No sooner do these sensory ganglia commence their proper functions, than the light of consciousness breaks in upon us—dimly, indeed, at first, but brightening with every succeed-

ing experience. It is in connexion, therefore, with this particular portion of our nervous system, and with the special functions which it subserves, that we trace the commencement of mental activity in its proper and acknowledged, because in its *conscious*, form. The step, indeed, from the excito-motor to the sensori-motor phenomena is, in most respects, a very small one. The same kind of action and reaction between the external object and the nerves takes place in both, and the resulting movements are equally independent of, and uncontrolled by, any volition of our own. The main difference is, that, as soon as the impulse *ab extra* reaches the sensorium, *consciousness* is awakened, and the accompanying actions are at once attributed to the mind, the self—the individual, whatever we may conceive that to be. In point of fact, it is the adaptive energy of the nervous system working under the influence of the, as yet, unconscious soul, which is operative as much in the one case as in the other—but it is only when the era of consciousness begins to dawn that we speak of *self* or the individual—as the motive power.

We have now, accordingly, two distinct factors brought under our consideration—1st, various external impulses acting upon us through the organism ; and, 2ndly, a nervous centre which receives those impulses, makes us conscious of them, and initiates a reaction. These impulses, we need hardly say, vary indefinitely in point of strength ; and the nerve-force which receives them, and reacts, varies equally as to its intensity in relation to the impulse which acts upon it. This being the case, it is almost self-evident that the effect produced will be very different according to the relation which the strength of the impulse bears to the strength of the nervous reaction.

Let us take a familiar example as an explanation of this point from the sense of smell. An intensely strong and pungent scent suddenly affecting the nerves will produce

acute pain. The *action* being so great in relation to the power of *reaction*, no other than a painful result can follow. A moderately strong scent, on the contrary—one which can just fill and satisfy the power of reaction—will often produce the most lively pleasure. But if, thirdly, the effect upon the nerve is very slight, so as not to satisfy the power of the organ, then *desire* is awakened, and maintained till satisfaction ensues.

We see from this, that when the outward impulse is too small in relation to the nerve-force on which it acts, the resulting experience is dissatisfaction and desire. If the impulse just exceeds the nerve-force, and satisfies it, the resulting experience is pleasure. Lastly, if the impulse is excessive in relation to the power of reaction, then the resulting experience is *pain*. There may be, of course, any number of intermediate states; but these are the main facts which we have at present to notice.

From the above explanations, we may pretty clearly understand the main characteristics of what is termed INSTINCT. If we experience *desire* as a consequence of that peculiar combination of the two factors which we have above indicated, an instinct is awakened which prompts us to seek for satisfaction, and to perform those particular actions which are most likely to lead to it. If we experience *pleasure*, then we have an instinct aroused which leads us to grasp, and keep inviolate, the means of perpetuating it. If we experience *pain*, then an equally strong instinct is aroused to relieve and avoid it.

These instincts are not at all under the control of our *volition*; they are purely sensori-motor actions, flowing *spontaneously* from the constitution of the nervous system, and the unconscious law of intelligence which guides and impels it. They differ from the excito-motor actions only in the fact of being ordinarily accompanied by consciousness, and consequently may be regarded as the first and most

primordial kind of conscious mental activity—that activity in which man and the lower animals stand very much on a level, and in which intelligence, though distinctly manifested, appears to lie under the control of necessity, and to be wholly unguided by the power of the will.

We have seen that mind and consciousness are *by no means* to be identified; that the intelligent principle, under the form of a plastic creative power, is really at work from the existence of the very first cell-germ; that it unconsciously shapes the organs for future use; and that, in the reflex actions of the spinal cord, it already *commences* to teach us the use of the organs it had already formed. Now, therefore, when the light of consciousness breaks in upon the process, we have no difficulty in identifying instinct as another and somewhat more advanced effort of that same teleorganic principle which is seen at work in the earlier organic processes, and which at length steps in to aid us in securing those ends to which life in all its previous efforts had been tending.

It has been supposed that all instincts are fixed and unchangeable, and wholly inaccessible, therefore, to the influences of education. A comparatively slight attention to the habits of animals soon shows us that this is not the case. The instincts of animals uniformly adapt themselves to the circumstances under which those animals continuously live. The same animal develops in one climate very different instincts from what it does in another. Domestic animals experience, from their contact with man, an almost entire change in their instincts. Animals employed for any special purpose—as the setter—form the strongest possible instincts for this particular duty. The young setter, *e.g.*, will stand and point out the game the first time it enters the field, the instinct being *inherited* from its parents almost like a part of its very nature. Facts of this kind, which might be accumulated to any extent, shows us that instinct, in place of

having a certain fixed and unalterable physical characteristic, is really an intelligent adaptive power, that takes into account the whole of the circumstances in which the individual lives, and moulds its habits of life accordingly. *Conscious* intelligence indeed it is *not*; but it is none the less a development of that great underlying principle of intelligence which we have already seen to be immanent in the human organism from the first moment of its existence, which pervades the tissues of the whole body, and which now begins to express itself in a still more developed form through all the functions of the nervous system.

The term *instinct*, then, expresses accurately the *primary* form of all our conscious mental activity. It is the first mode in which the intelligent principle within us operates *in conjunction with consciousness*. In tracing, therefore, the history of the human soul from its birth to its maturity we must dwell somewhat particularly upon this first instinctive era, as forming a kind of crisis in its whole being.

The infant, when born, comes into the world with a body completely formed, and, consequently, with a perfected nervous system. That nervous system, of course, is as yet without *experience* of impressions of any kind. We do not mean that it is a mere material machine, ready made, and only waiting for some spiritual force, *ab extra*, to set it in motion. To this view of the case our whole theory of mind stands quite opposed. All we mean is, that as yet the newly-created being has never come in contact with those powers of nature in the midst of which it has henceforth to live, and by means of which alone it can carry on the further process of mind-development.

At the period of birth this impressionless state ends, and a new era commences. The individual is now, by a sudden change of condition, brought into contact with those *stimuli* for which its organization had been silently preparing. Amongst these stimuli we may reckon its own bodily states,

the interchanges of heat and cold, the sound of voices, light affecting the eye, hunger, the soothings of the nurse, the comfort or discomfort of different positions of the body, and many more circumstances of a similar nature.

These stimuli acting upon the nervous system bring about certain *reactions*, which appear under the form of simple primordial instincts. An uncomfortable sensation produces struggling and crying, which are the first instinctive attempts to avoid "*malaise*" or actual suffering. A comfortable sensation produces nervous excitation, which may be considered as the first instinctive expression of *pleasure*. The feeling of hunger in the alimentary canal produces the first instinctive desire for food, and guides the process by which the infant obtains its supply. A flash of light causes the eye to turn in the direction from which it comes, which is the first instinct of *curiosity*—the rudimentary form of *mental inquiry*. If the light be too strong the eye is at once turned away or covered with the eyelid—one of the primary forms of the instinct of self-preservation.

The nature of these instinctive phenomena is tolerably plain. They are, all of them, physiologically considered, reflex actions emanating from the sensory ganglia. As such they are a simple expression of those two fundamental facts, from which all our mental history takes its start—namely, the existence all around us of certain appropriate external stimuli, and the internal power of *receiving* those stimuli and *reacting* responsively to them. This double process of action and reaction in their varied relations to each other calls forth the first primordial instincts of our nature, *i.e.*, the first unconscious effort at intelligent and adaptive activity in connexion with the external world; and thus our mental history on the world's stage begins, and the first act of our conscious life is played.

It is not an uncommon idea to contrast instinct and reason, as though they were opposite in their nature, and the one

excluded the other. The real fact of the case is that, so far from being opposites, they are fundamentally *identical*. Instinct *is* reason ; but reason in its undeveloped, semi-unconscious, and wholly involuntary form. The primordial instincts we have just referred to are the first efforts of reason to awaken from its slumber, and to commence a new and conscious life in connexion with the higher organism which *human nature* presents. Man is, really speaking, as instinctive a being as any of the lower animals. A very large portion of his life and activity is *always* instinctive to the end. The entire *motor* system is automatic in its operations, and a large portion of our higher mental activity retains throughout life a purely instinctive mode of action. The only reason why we notice the instincts in man less than in the animals is because our volitional intelligence comes gradually to play so much more *prominent* a part in the whole process of human existence.

In descending, accordingly, to the primordial forms of mental activity in man, and tracing the growth of mind from its first budding forth in human life, we must always go back to the fundamental instincts as the starting point. These are really the primitive facts of the case. Here are appropriate stimuli, which act upon us through the bodily organism, and here are certain instinctive powers of reaction which are immediately called out by their influence. This is the commencement of our whole mental history ; and, however great that history may hereafter become, it is simply a normal growth out of this primary germ. Just as the formation of the simple cell in the structure of the animal economy is *in kind* the very same effort of plastic power, which, by repetition and accumulation, frames all the organs of the body ; so are the first instincts which the mind develops under the stimuli of the outer world the primary movements of an intellectual power, or *mind-force*, which, by a similar process of steady development, constructs all the faculties of

our mental constitution. The very highest phenomena, whether of intelligence or volition, are but the gradual expansion of what is potentially contained *here*.

We have now, therefore, the problem of psychology fairly before us. We know the first elements of our mental constitution, and we know the primary laws by which mental development is carried forward. Our task will be to show how out of those elements, and by the action of these laws, the whole of our faculties are successively constructed.

CHAPTER V.

THE DOCTRINE OF INDIVIDUALITY.

WE have now gone through what are termed the primordial forms of our mental activity, that dim region which lies midway between nature and consciousness. Yet, dim as it is, there is no class of mental phenomena which bears so directly upon the essential nature of the soul, and none which unfolds to us so clearly the fundamental laws of our mental activity. The *facts* which we have brought forward in connexion with vital, nervous, instinctive, and preconscious states of existence are, for the most part, fully admitted by psychologists of all classes ; the theories by which these facts are accounted for are various.

The great point always to be aimed at in inductive investigations is, having discovered and marshalled the facts of the case, to determine the *conception* under which they are to be viewed, and by which they gain a sort of organic unity and self-consistency. We shall briefly notice *four* of such conceptions, all of which are now widely current throughout Europe, in different schools of philosophy.

I. First, then, we may notice the materialistic hypothesis, that which sums up all the facts of psychology under the general conception of their being simply functions of certain 'forms of organized matter. Materialism has, certainly, a kind of *prima facie* distinctness and intelligibility in its favour ; but, in point of fact, if looked at more closely, it simply resolves itself into a number of subordinate theories, none

of which are very easy to carry out. Thus, one materialistic philosopher considers mind the result of certain particular *forms* of organization ; another, the result of the commixture of various chemical or other substances ; a third as phenomena of electricity and magnetism ; a fourth affirms that we have no good reason to pronounce it an impossibility that matter should be endowed directly with the power of thought. The old spiritualistic arguments *contra* are—that there is no compatibility between material and mental properties ; that no anatomy or chemistry can carry up the changes of matter to the point where they are seen to pass over into forms of consciousness ; that matter is dead and inert, and that mind only is living and active ; and that the actual matter of the body changes many times, every atom of it, in the course of a life, without changing the personal identity.

All these are reiterations of the obvious fact, that we have naturally a distinct conception of two kinds of properties, the one material, the other spiritual, each permanently *sui generis*. Every fresh discovery made in the material conditions of thought is but another secondary cause, and does not aid us any the more to bridge over the gulf which lies between matter and consciousness.

But, leaving all these arguments alone, there are two considerations which are fatal to materialism as a theory :—1. That no one knows what matter is, so that when we have succeeded in reducing mind to matter (if it were possible to do so), we are really no nearer to any valid solution of the difficulty of the case than we were before. Matter, after all, may perhaps be reducible to force, and force to spirit, as its source and spring. 2. That the material forces from which mind is supposed to emanate are, as far as all our experience goes, uniform and constant in their operation, while, in every single mind, we have a separate and distinct individuality. How any combination of chemical, electrical, or any other physical forces, passing through any conceivable kind of

organic instrumentality, could result in the infinite variations of human individuality is quite beyond our powers of conception, and is alone sufficient to stamp materialism as inadequate to sum up the facts of the case intelligibly into a scientific formula.

II. Another theory regards mind as a special manifestation of the Absolute thought. All nature is full of design, and design implies thought or reason. Moreover, there is a fundamental unity between the designs and forms of nature and the laws of the human reason. Nature, for example, exhibits geometric principles in operation; reason grasps them in the abstract. The geometry in both cases is fundamentally one and the same. What then, it might be said, do we mean by mind but a special adaptation of the Absolute thought of the universe, which in man comes at last to self-consciousness? No doubt a theory of this nature solves the difficulty of classing the vital and the mental forces under one grand category; but here, again, the fact of individuality steps in as a disturbing element. Thought, it is said, is absolute; if absolute, impersonal, and having no special relation to the individual. But what is the fact? Laws of thought there are, it is true, in the abstract, but minds bear upon them the stamp, not of an absolute unity in the nature and procedure of their ideas, but of the most entire individuality. This individuality is impressed upon the whole person, upon his body, his mien, his language, his mental processes. Everything tends to show that there is a real, and not a sham individuality at the basis of all this, and that the thought immanent in me, and you, and every one is far from being a mere wave in the ocean of infinite reason, welling up for a time, and then sinking down, to be for ever lost again in the ocean of the Absolute. This is not a conception of the facts of the case which gives by any means a satisfactory interpretation of them.

III. The Dualistic Hypothesis is that the mind and body

are two wholly distinct existences, with a temporary and partial connexion, but still carrying on their respective functions quite independently of each other. The primordial forms of mental activity which we have already considered are but little consistent with this view of the case. The connexion between the mind and the body, the impress which the one bears of the other, the constancy with which a mental translates itself into a physical fact, and *vice versa*, and, more than all, the complete correlation which can be proved to exist between the vital, the nervous, and the mental forces, all present a series of difficulties which the ordinary dualistic hypothesis is quite unable to cope with and explain. The whole series of facts and observations, indeed, which we have brought forward in the last four chapters contain a detailed refutation of this hypothesis, and drive us necessarily onwards to find another and more fitting conception. Such a conception we appear to find

IV. In the Doctrine of Individualism. According to this doctrine, every man is made up of two elements, material and spiritual, which completely interpenetrate each other. Body and mind here stand to each other in the relation of matter and form. The union of these two constitutes the individual—the personality ; and every individual takes his place in the whole plan of creation as an independent unit, having a real and essential existence of his own. In this conception of the individual, as being the realization of a positive spiritual existence within the conditions of time and space ; as presenting a complete interpenetration of the two elements, from the very first cell-germ, which contained the future man, up to his complete maturity ; and as involving a perfect unity of the vital and spiritual forces, viewed in their entire teleological activity ; in this conception, the facts of the case are all summed up, at least in an intelligible manner, and the view really taken by the practical common-sense of mankind finds at the same time a scientific expression.

Although, therefore, I do not wish to put this kind of theorizing on a level with the facts and laws of mind, of which we can assure ourselves with perfect scientific accuracy, yet I propose this doctrine of individuality as one which helps us to hold the phenomena together for the present, and as a theory which may be modified or perfected indefinitely by the course of future investigation.

PART II.

NATURE AND DEVELOPMENT OF PERCEPTION.

CHAPTER I.

ON SENSATION, PROPERLY SO CALLED.

WE have already virtually learned in the preceding chapters what sensation is, and what is the physical process by which it is produced. We have seen that the nervous system possesses three principal centres of action ; that when an impulse derived from some external object only reaches the lowest (*i.e.*, the spinal cord), and then reacts, it produces motion, without consciousness ; but that, if the impulse pass onward to the sensory ganglia at the base of the brain, consciousness is ordinarily awakened in connexion with the action and reaction which immediately takes place. The consciousness, then, of any given nervous impression, thus originating, forms what we term **A SENSATION**.

Sensation itself, accordingly, must be regarded as an ultimate and indecomposable fact, although the steps by which we arrive at it are manifold. Certain stimuli act upon us *ab extra* ; a nervous system receives them, and conveys them to one of the great centres of nerve-force ; a particular feeling is produced in us as soon as the reaction from that centre sets in. This process, to judge by all appearances, takes place in the child at birth, and is virtually connate.

We have hitherto spoken of nervous action and reaction, accompanied with consciousness generally. The word *sensation*, by which we have now designated this consciousness, reminds us, however, that the one general fact above

mentioned appears in a variety of different forms. The five senses, as they are usually termed, imply the consciousness of so many different varieties of nervous impulse, to which we are subjected, in connexion with different parts of the nervous system. These varieties are so great, and the difference in the states of consciousness so remarkable, that they would hardly seem at first to come at all under the same class of phenomena. It is only by a more accurate investigation of the nervous processes that they are seen to be merely different forms of the same general phenomenon.

It has always been a puzzle amongst mental philosophers how it is that we can come to a consciousness of external objects at all. Theories without number have been formed, from the time of Plato downwards, to bridge over the gulf which lies between matter and mind, between objects of sense around us and the fact of sensation within us. This chasm in our knowledge we do not pretend wholly to fill. At the same time, so many facts bearing on the question have been brought to light by the progress of physical science on the one side, and by physiology on the other, and so much has been added by the mental analyst likewise from his point of view, that the distance between the world and our own consciousness has vastly diminished, and the mystery driven even back to that one point of connexion between the brain and the human soul which no analysis appears likely fully to solve. Let us attempt, then, to strip away all that is mixed up with sensation naturally, and all that is added to it by our subsequent mental activity, so as to analyse the bare fact itself, and reduce it to its simplest elements.

Looking to the physical and external parts of the process, we must consider, first of all, what it is that the nerves convey from the world without to the mind within. Let us take, as an example, the sense of hearing, as presenting the greatest degree of simplicity. We know, from the investigations of physical science, that the sole medium of sound is

the atmosphere. Where there is no atmosphere, there can be no sound ; and where the atmosphere is perfectly still, perfect silence is the necessary result. The real cause of sound, therefore, externally considered, is found in the motion of the atmosphere ; and the variations in the acuteness or gravity of sound arise from the greater or less rapidity of the oscillations. The deepest note which the human ear appears capable of perceiving as a continuous sound is that produced by sixteen oscillations in a second ; the acutest, that which is produced by about 48,000 oscillations in the same time. The differences in the quality of sounds arise in like manner from the peculiar way in which the atmosphere is affected by the object that sets it in motion, and the corresponding peculiarity of the waves that reach the ear.

What we really sensize, therefore, through the ear, is simply the motion of the atmosphere and nothing more. The human ear is an apparatus beautifully formed for receiving the vibrations, on which all sound depends ; and the auditory nerve conveys them to the sensorium. As to the way in which this latter effect is brought about, we have as yet very little insight. The soft texture of the nerves, and the manner in which they are embedded in the surrounding materials, would naturally suggest a total inaptitude for propagating vibrations in the ordinary sense of that term. It seems more probable that the flow of life through the body is accompanied with a constant thrill and movement in every part of the nervous system, so that the outward oscillations do not so much give rise to wholly new vibrations, as enter into conflict with the nervous action already going on, and give it that peculiar determination which is necessary to create any given sensation in the mind. This is, perhaps, as far as it is possible to go in our analysis of the purely physical process. How the vibrations of the air come into conflict with the living thrill of the nerve, and how the result of this conflict reaches the mind, we are wholly unable to

comprehend. It is one of those hidden secrets of nature which science has not yet been able to unfold.

In the sense of sight, a similar analysis holds good. Here the vibrating medium is not the atmosphere, but a universally diffused ether, which is set in motion by what are termed luminous bodies. Just as atmospheric oscillations form the external cause, and sound the internal result, in the case of hearing ; so, in sight, the oscillations of the light-bearing ether form the outward condition, and colour, in all its various shades, the inward result. Here, accordingly, as before, it is simply motion in nature giving rise to motion in the nerve-world, with which we have immediately to do in vision ; while, to keep up the analogy, it is the difference in the rapidity of the oscillations that creates all the infinite variations of hue. The red rays, it is calculated, require 458 billions of oscillations in a second, the violet rays 727 billions, and all the other colours and shades of the spectrum some intermediate number. That the phenomena of sound and sight spring out of particular states of the corresponding nerves is clear from the fact that pressure on the eye, or any artificial irritation, produces the perception of light as strongly as the normal impulses derived from the vibrating ether, and that any artificial excitements of the auditory nerve will produce noise in the head. Ghost-seeing often arises in the same way ; that is, when the conditions of sight are brought about by the nerves being affected through some other than the ordinary and legitimate stimuli. Whatever, in a word, can affect the regular vital movements of the nerves, and put them into a condition at all similar to that produced by the proper external stimuli, will bring about similar phenomena of consciousness.

We come next to the sense of feeling. This sense comprehends two apparently distinct series of sensations ; namely, those of touch, properly so called, and those of heat. With regard to the latter, it has been pretty well established that

the phenomena of heat are formed by the oscillations of a subtle fluid similar to that of light. The sensation of heat, therefore, may be brought under the law of motion just as much as that of sight or hearing, and may be regarded as analogous. The phenomena of touch are produced by impact in various ways; and it is in accordance with the nature of that impact, whether harder or softer, more rapid or more slow, that the resulting sensations are determined. A blow is a sudden affection produced by the rapid motion of some object against a considerable surface of the body. Pressure is a more continuous affection of the same kind. A prick is the motion of some object against one minute point of the skin. If the act of pricking be repeated rapidly, it produces a feeling of burning, and, if it be very soft at the same time, of itching. An extremely light and gentle motion over the surface of the body produces tickling. In every instance, the peculiar kind of sensation is determined by the nature of the motion and the consequent impact.

What is called the muscular sense, we shall show hereafter, does not belong to the category of sensation at all, but to that of perception. The only two senses left, accordingly, are those of taste and smell. In both these cases the process by which the nerves are affected is of a chemical nature. The substances received upon the surface of the tongue or the internal membrane of the nostril are subjected to the action of saliva or mucus, and, being thus dissolved, produce a chemical action on the nerves, which gives rise to the phenomena of taste and smell. All chemical action arises, however, from certain relative movements in the ultimate atoms; and it is these movements which, in the case of taste and smell, really give rise to the peculiar sensations so designated. One striking proof of this fact is, that a similar atomic action can be produced by magnetism, and that various tastes, particularly that of phosphorus, can be produced by the introduction of magnetic plates into the mouth; thus most obviously

showing that the phenomena of taste are really produced, like those of heat, by the motion of certain minute particles, whether of some magnetic fluid or of anything else, when subjected to chemical action. By these atomic movements the nerves are affected, just as they are affected by the infinitesimal oscillations of light and heat; so that the same law holds good throughout, and enables us to connect the phenomena of sensation universally with motion, as its immediate external antecedent and internal concomitant.

Looking now from the physical side of sensation to the mental, we shall find that the view we have just taken solves or dissipates many of the difficulties in which the question has always seemed to be involved. First of all, it makes the external cause, and the effect upon the nervous system quite homogeneous. Outward motion is the cause, inward motion is the effect. Instead of having the solid forms of the outward world standing, as it were, face to face with the nervous energy, and being obliged to consider how it is possible for two things so entirely heterogeneous to come into so close a state of mental action and reaction, we have now the whole problem reduced to two developments of motion; first, motion in the fluids around us; and, secondly, a certain determination given, by their means, to the atomic movements or vibrations of the nerves. How the movements of the nerve-force are converted into those of mind-force we cannot say, any more than we can explain how it is that mechanical motion is converted into heat, or *vice versa*. But the outward phenomena are traced in the way we have now indicated, as far back to the inward consciousness as seems possible, without breaking through the last film of separation that divides the conscious from the unconscious world.

Secondly, the theory we have propounded enables us to draw a clear line of separation between sensation, properly so called, and all the subsequent mental phenomena which attach themselves to it. Thus, taking the sense of hearing,

we can now easily strip away every possible association which connects itself with what we hear, and understand that the sensation of hearing *per se* simply implies the nervous effect of certain atmospheric vibrations and nothing more. Taking the sense of sight we can at once negative the possibility of sensizing shape, size, thickness, distance, or any other of the properties of bodies ; all we see sensationally is colour, as being the direct result in the consciousness of the luminous vibrations which affect the optic nerve. And so in like manner does every sense confine itself to one single and peculiar series of phenomena, which are not by any means to be confounded with the mental acts and associations afterwards connected with them.

Thirdly, the same theory introduces unity into the entire sphere of sensational phenomena. The whole of these phenomena are reduced to the single principle of motion, as the invariable antecedent,—this motion, as it exists in external nature, exciting a corresponding action in the nerves, and then, through the nerve-force, affecting the mind.

Thus, then, we find, by the combined aid of physics and physiology, that man possesses a nervous system, pervaded by a force which can pass freely from every point in the human system to the centre, and from the centre to every point in the circumference ; that he is placed in a universe palpitating with countless millions of vibrations, of which vibrations the nerves of the different sense-organs are directly susceptible ; that the whole connexion which the mind has or can possibly have with the external world is formed either by the motion of the fluids around us, or by the motion of the particles of bodies that come into chemical contact with the nerves ; that the material universe, therefore, makes itself known to us entirely through the medium of motion ; that this motion expresses itself in the nervous system by modifying the regular vital action which is always going on there ; and lastly, that this modification of the nerve-force manifests

itself to our consciousness in the varied phenomena of what we term SENSATION. Thus the world communicates with the consciousness wholly through motion as the link ; and out of the experiences thus formed our whole intelligence, by means of processes we have yet to consider, is subsequently developed. From the foregoing explanations of the nature and origin of sensation the following deductions may be made.

1. That both the quantity and the quality of the nervous affection, as well as its influence upon the consciousness, vary according to the object that acts upon us, and according to the structure and susceptibility of the particular nerves affected. Some nerves are more susceptible than others ; and some objects are more calculated to excite them than are other objects. One object, for example, will influence the nerves by a mechanical impulse, as when we receive a blow ; another by a chemical affection, as in the sensation of taste or smell ; a third by means of infinitesimal vibrations, as in hearing or sight. In each case there will be a different effect produced upon the sentient soul arising from two causes, *i.e.*, primarily, from the structure of the nerves ; and secondarily, from the object affecting them.
2. The more perfect and delicate the organ the less impulse is required from without to excite it, in order that it may perform its normal functions. The eye and the ear, for example, which are the most perfect and delicate portions of the sensational apparatus, are roused into action by the impact of the finest vibrations ; while portions of the body, with a less sum of vitality in them, require forcible excitement to make them operate at all consciously upon the mind.
3. There are many peculiar impulses, which are suited to particular nerves, and which have no effect upon any others. Light, *e.g.*, affects the optic nerve, and the vibration of the air the auditory : but light has no effect upon the ear, and the vibrations of the atmosphere have none upon the eye.
4. The susceptibility of the

nerves is greatly modified by the external impulses which habitually act upon them. If a nerve be subjected to constant and violent excitement it becomes gradually duller, until its sensitiveness is wholly lost; on the contrary, regular excitement at proper intervals, and moderate in degree, increases the power and susceptibility of the nerves, and renders them more vigorous in the exercise of their appropriate functions. Thus, continued gazing, with an intensity of light, will destroy the power of vision, while by regular exercise the clearness of sight becomes greater and greater.

These conclusions may serve as hints for the early education of the senses. They show us (1) that care ought to be taken not to overtax the organs; (2) that regular exercise should be provided for them; and (3) that natural and legitimate stimuli should, as far as possible, be encouraged. In this way the eye, the ear, the hand, the palate, and the nostrils, may assume a delicacy in their sensational power which would only be destroyed by harsh and unnatural excitations.

CHAPTER II.

ON PERCEPTION.

IN the last chapter we have described, generally, the manner in which the first crude material of our knowledge is drawn from the external world and brought into contact with the mind. The name we give to this whole process is Sensation. Sensation, however, taken alone, is not knowledge ; it is not even experience. All that it indicates is a particular mental state subjectively considered ; and all that any number of sensations (independently of some subsequent mental activity) could indicate, would be a succession of isolated mental feelings, having no connexion with each other, and leading, consequently, to no kind of intelligence or knowledge. The next thing we have to do, therefore, is to see how the mind comes to recognise the material furnished by the senses ; how it comes to grasp and comprehend it ; how it consolidates it into a connected whole ; how it co-ordinates one portion with another ; and, finally, constructs out of it an entire body of actual experience. This whole sphere of mental activity we term perception ; and it will be at once evident, that it is not one special and peculiar faculty to which we give this name, but the entire activity of the mind as employed, at this particular era of its development, on the special work of interpreting the primary intimations of the senses.

Chronologically considered, sensation and perception can hardly be separated, inasmuch as we begin to compare and interpret our sensations, in a certain way, from the very first

moment that we possess them. But, logically speaking, the two are perfectly distinct, and indicate quite different sides of the same general fact. Sensation only brings the various changes, produced upon the nerves by external stimuli, home to the consciousness; perception includes all the mental action which takes place as the direct result of those changes. We cannot say that perception begins with the first sensation in our life's history, for one single inward state of consciousness could never provoke mental reaction at all; but it begins with the first change of state—the first instance in which the mind passes over from one consciousness to another. From this first change of state our conscious intellectual development takes its start.

To analyze this primary step a little more closely, let us first imagine the mind existing in a given sensational state, A. So long as this state continues wholly unchanged, no mental action is excited. But a second sensational state, B, is now produced, and a complex effect will result. The original sensation A had been preceded by certain vibrations in the nerves; these vibrations had been succeeded by some change in the tissues of the central organ, and that change, again, had occasioned a given mental condition termed a sensation. A second sensational impulse B was then produced; *i.e.*, a new vibration passed through the nerves, a new change took place in the tissue, and a new sensational state ensued. An important question, then, now arises, namely, What has become of the first sensation A, while the mind is occupying itself with the second B? The primary sensation is not entirely obliterated; so far from that, its effect continues even while the consciousness is engaged with the new phenomenon, B. This new phenomenon we thus see to be really a complex result, in which the experience of the first sensation is blended with that of the second, and a given mental effect is produced, that differs materially from either of the two sensations, taken separately and by themselves.

The co-existence of the two mental changes, in fact, gives the first conditions on which an elementary and instinctive act of separation and comparison can be instituted ; and this act forms the first link in the chain of mental development which ensues.

Every succeeding act of our mind's development is only a more progressive act of separation and comparison—a new application of the fundamental law of mind already explained ; and the growth of mind as much results from the network of experience, thus woven together, as does the growth of the body from the progressive construction of organized tissue. The adding of one mental fact to another is, in truth, closely analogous to the addition of one cell to another, as shown in the researches of histology. Just as the single cell, from which the whole tissue proceeds, adds, when brought into contact with the proper stimuli, a second cell to the first by virtue of an inherent law of development, so, when a second sensation is added to the first, there is a definite step taken in the process of mind-formation by means of the mental act, which the conscious co-existence of the two sensations involves. The physical process terminating in a state of passive feeling is all that we include under the term sensation ; the mental activity which commences the moment a second state of consciousness is experienced is the first step in the development of perception. Perception is, therefore, nothing more nor less than the first effort of the mind after knowledge ; and the laws of perception, we shall find, are, strictly speaking, the same as the laws of thought, although seen upon a more primitive and elementary sphere of action.

The difference between sensation and perception, however, may be also established on purely physiological grounds, as the one is connected mainly with the nerves of sensation, the other with the nerves of motion. The motor nerves form, as it were, the organs by which the mind inquires of the

world without. The moment any new sensation reaches the consciousness, a reaction takes place, which passes along the motor tracts towards the spot from which the affection arises. Thus, as it is by motion, on the one hand, that sensation is produced, so it is by a reactionary motion, on the other, that the process of perception is carried on. For example, it is by the motion of the eye that we are enabled to traverse the field of space presented to it ; and it is in like manner by the motion of the hand that we judge of most of the qualities of material objects. In every case alike, it is along the nerves of motion that the perceptive activity travels, in order to make its inquiries respecting the cause of its sensations, and to gain their proper interpretation.

It will be readily understood from what we have now said, that the process of perception must be a very complicated one, much more so than most mental analysts have been willing to admit. It is, of course, much easier for the mental philosopher to cut the whole knot asunder at once by means of a theory, than to trace, step by step, the growth and completion of our perceptive life ; but we should not be advancing any further on the road towards a valid psychology by merely continuing to theorize on questions of this nature.

The idealist, *e.g.*, refers the whole work of constructing a complete knowledge of the universe around us to the inherent powers of the mind itself, independently of any external experiences whatever ; but he can never, by means of his theory, override the natural realism of mankind. The doctrine of occasional causes brings in the intervention of the Deity as a link between the soul and the world : but this is merely a “*Deus ex machinâ*,” introduced to save the trouble and obviate the necessity of analysis. The sensationalist goes to the other extreme, and regards our perceptions as simply impressions of external things made upon the mind through the organs of sense. But this view is wholly inconsistent with the plain fact of our perceptions being gradually

acquired, and is altogether irreconcilable with the fundamental difference that exists between material objects and mental phenomena. The school of Reid is contented with resting upon a fundamental belief, and appeals to the common sense of mankind for the objective validity of our sense-perceptions. This, it is true, may be a very good answer to the question, why we always act in the world as natural realists ; but it contains no philosophical analysis of perception, and totally fails to do what all true philosophy proposes—namely, to make us comprehend what we already see and believe in.

By keeping our eye away from all these theories, and steadily fixed upon the facts of the case, we shall be enabled to understand what elements every act of perception really involves, and how it becomes more and more complicated with every fresh experience we attain. Let us attempt to trace these steps from the commencement.

To perceive a thing means, first of all, to recognise it. A single sensation, as I before showed, would not awaken any mental activity—any perceptive effort. If other sensations succeed, and the perceptive activity is awakened, all that we mean when we speak of perceiving any of these sensational phenomena is, that we recognise them as being more or less similar to what we have experienced before. The very first act of perception thus implies a latent process of separation and comparison, without which, indeed, the mind would simply be buried in its own subjective and momentary feeling.

When we come to perceive special objects, then, it is implied that we not only recognise, but that we also begin to classify them. Take the most insignificant object possible —say a small pebble from the road-side. In walking along we see hundreds and thousands of such pebbles without attending to our sensations, *i.e.*, without perceiving them at all. If we now direct our attention to any one of them, and perceive it, this simple act implies that we recognise it as

something like what we have already seen, and that, consequently, an implicit act of classification has already been performed. Of course, the fact of our being able to classify any special object implies a considerable accumulation of former experiences. Such experiences must exist before the qualities even of the simplest thing imaginable could be made the object of attention, and become the ground of a distinct classification.

If we take a more complex object—say an orange or an apple—then the fact of perception implies a much greater co-ordination of experiences. Here we have a certain form, a certain colour, a certain smell, a certain organic type, all combined in one whole. The primary sensations which one apple produces may be very different from another. One may be large, another small; one red, another yellow, and so forth; but still the mind, in the act of perceiving, classifies each correctly according to certain typal resemblances, which agree with its former experience. Leave out one of the essential attributes, and, though the general appearance may be extremely similar to other apples, the mind would not perceive it as such, but would at once vary the classification. When we come to landscapes, or large objects, such as a church, a palace, or a mountain, then all the acquired judgments we have formed upon colour, distance, size, &c., enter into every simple act of perception. If, in addition to all this, we have a movement of the parts, as when we watch a game of cricket or the progress of a quadrille, then a new set of relations comes into play, and requires a most complicated co-ordination of the parts before we comprehend the whole.

These acts of the mind are performed by habit so rapidly that we do not notice the process, but pass on at once from the sensation to the final result. What we have said may be sufficient, however, to show that perception, instead of being a simple act of mind, is a most complicated series of

acts, involving recognition, classification, co-ordination of parts, comparison of relations, and the combination of the whole into definite and instantaneous judgments, which are, for the most part, an infallible interpretation of the sensations actually presented to us. We are brought, therefore, necessarily, to this view of the case,—that all perceptions are really acquired perceptions; and that, from the very first experience we enjoy upwards, there is a perpetual series of mental acts each moment going forward, which (to speak metaphorically) form the cellular tissue of the mind, and gradually consolidate into the higher forms of perceptive power. In giving this view of our mental development we are by no means adapting a purely experience-principle in relation to our ideas. Just as in the first cell-germ of the body there is contained potentially a nature which gives a necessary form and character to the whole succeeding structure, so, also, in the very first germ of mind, there is contained a certain mental type, which evolves, of necessity, certain faculties, and, in connexion with those faculties, certain ideas. It is no more true, however, to say that these ideas are innate, than it is true to say that the embryonic germ of the body has all the limbs and organs of the future man born with it. The one as much as the other, is a development, carried on, indeed, by means of external stimuli, but following the necessary typal laws impressed upon it from its first entrance into the condition of time and space.

After this general view of the nature and genesis of perception, we shall be better prepared to enter more fully into the details, and attempt to trace, step by step, the gradual construction and final completion of the perceptive power.

CHAPTER III.

INDESTRUCTIBILITY OF OUR PERCEPTIONS.

LET us begin our detailed exposition of the mode in which the perceptive power is originated by a re-statement of the point of view from which we start. Our position is this:—That just as the primary germ of the material organization does not possess bodily organs, but simply a nature, which, in the process of development, necessarily creates them,—so the mind, at birth, does not possess either ideas or faculties, but only a germinal nature, which, as it is evolved by means of outward stimuli, brings them certainly and surely into being.

As we have no memory reaching back to this period, and as the growth of our perceptive power is so early and so unconscious, we find it difficult to imagine a mental condition in which perception does not already exist in some more or less developed form. This difficulty can, however, be partly removed by close observation upon cases in which the perceptive power is contravened in its growth by certain physical defects. Amongst such cases we can reckon all those who are born blind. To us it seems impossible not to have the power of perceiving by the eye the size, the distance, the form, &c., of the various objects around us. From actual examples we know, however, that a person who suddenly receives his sight, after having been blind all his life, gains no idea whatever of these relations from the actual phenomena presented to him. All he sees is a mass of

colouring, which appears to touch the eye ; and it requires a long lesson in the school of experience before his judgment is enabled to interpret the varied colours presented into terms of distance, size, form, and solidity. It is evident, therefore, that all these perceptions, at least, are acquired ones.

Similar experiments may be made with persons of defective brains. While every purely instinctive act is often performed by them with the greatest energy, it not unfrequently happens that the perceptions remain dull from want of mental power sufficient to learn the daily lessons which experience ordinarily teaches. From this we conclude that the power of perception comes within that region of intelligence, which has to be unfolded by time and experience, rather than that of that in insects, which show something like perfection from their very first appearance.

Facts such as those now referred to, then, give us ample reason for believing that the first perceptive impressions of infancy must be weak, dim, and indeterminate. Sensations, indeed, pour in upon the soul, through all its five windows, but it is only very gradually that they can produce strong and vivid perceptions. In considering the mode by which the power of clear and vivid perception grows and matures, the first point to which we look, as containing the primary condition of all mental development, is the persistency and indestructibility of our perceptive impressions.

The notion which has very generally been entertained of the nervous system in connexion with the mind is this—that it is a wonderfully formed instrument, which can be directly acted upon by external things ; that every impression it receives is faithfully transmitted to the sensorium ; and that we may thus be made the subjects of any number of mental phenomena, which come and go, and leave no abiding trace behind them. Now, this is not by any means a correct apprehension of the case. An impression made upon the nervous system is not merely conveyed along it, as by an

instrument or organ, but occasions a permanent change in the cerebral structure. This permanent change, moreover, stand parallel with a similar effect that is wrought upon the mind, whatever we choose to mean by that term. Accordingly, every nervous impulse, instead of being a momentary phenomenon, which comes and goes, is a fact, which leaves a lasting result behind it ; and every individual perception, arising out of it, instead of being an evanescent mental experience, is something definitely added to the former stock of experience. That a perception continues to exist in the consciousness is manifestly not the case ; but still it remains tacitly in the mind, in such sense, that it may again be brought back into consciousness by any sufficiently active suggestion.

Thus, we have every reason to believe that mental power, when once called forth, follows the analogy of everything we see in the material universe, in the fact of its perpetuity. No atom of matter, when once created, can ever, in the material order of things, be destroyed. It may change its form to any extent, but can never perish. No particle of physical force, when once exerted, is ever lost. It, too, may undergo unending transformations, but, in some sense, it always continues to exist. And so it is with mental phenomena.

The facts on which our belief in the persistency and indestructibility of all perceptive impressions rests are numerous. The power of memory assures us, first of all, that, when an impression has passed through the mind, it can remain there, whether within or without the range of consciousness, for an indefinite period. The ordinary expectation of mankind is, that such an impression, within certain limits will remain ; for all the business of human life rests on the faith of memory as a safe and sure repository of facts, while the want of it betokens a mental defect, tending towards imbecility.

The question which next presents itself to us is a most important one. We know that when a definite mental experience has been gained, and then passes away from the consciousness, it may again be brought to light by means of some strong association. This being the case, it is evident that something must remain behind, which represents this experience, when out of consciousness ; that there must be residua left in the structure of the nerves, or the soul—or both, which ensure the possibility of reminiscence ; that the basis of every idea we have possessed must really continue to exist within us ; and that these relics, whatever they be, form a very legitimate object of psychological inquiry. This is the precise point, accordingly, to which we must next direct our attention.

CHAPTER IV.

ON THE NATURE OF RESIDUA.

IF the question were definitely put, What are residua? we confess our incapability to give a complete answer, without, at least, implying some theory of mind which we are as yet unprepared wholly to support. If we were to look merely to the physical side of the question, and say, "By residua we "mean certain permanent changes which are made in con- "nexions with every mental effort in the substance of the "brain; certain cells added to the texture, which ever after- "wards remain there as the material representatives of our ideas;" this would explain nothing at all of what takes place within the sphere of the consciousness. Neither is sufficient yet known of what goes on in the substance of the brain for us to make any such affirmations, except as a mere provisional hypothesis.

All we can do is to look at the question phenomenally, and to leave all mental theories for the present in abeyance. The phenomena of the case, briefly restated, are these:— When a given mental impression is produced upon us, it remains for a time before the consciousness, and then gives way to others. We know, however, that it is not absolutely lost; for, if the proper conditions recur, the impression is renewed. The conclusion is, that there must be something deposited within us which subsists permanently, and which is equally there, whether it be at any moment the immediate object of our consciousness or not. This something, then,

we term a *residuum*, using that expression, it will be observed, without implying any theory on the subject whatever.

It may aid us in understanding something more of the psychology of residua if we look at some peculiar instances which illustrate the existence of mental impressions apart from consciousness. It happens not unfrequently that the name of a particular person is mentioned, whom we know that we have before seen, whom we are sure we should recognise again, but whom we cannot now distinctly recall. The personality, as a whole, is known to us, *i.e.*, his name and general individuality; but we cannot remember the details. On what, then, is our conviction based, that we only need to have the person presented to us in order to produce instant recognition? Clearly on the supposition—nay, the certainty—that the former traces still exist within the mind, and that they may any day be reawakened, so soon as ever the right spring of association is touched.

Again, to take another kind of instance: when a person speaks too gently, we often ask him to repeat what he has said; but, before the repetition is made, we come to the full perception of it, from the first utterance, without needing a second at all. In like manner, after writing an exercise or a letter, we sometimes wake up to the consciousness, even a day or two after, that there is some mistake made, of which we were wholly unconscious at the time of writing. Numerous little facts of this nature show us that we experience many mental impressions which do not at the time enter into the consciousness. That they really reach the mind is evident, or they would never afterwards appear as elements of consciousness. The sentence, which we wish repeated, must have really been heard, and the mistake which we discover some days after it has been made, must have really entered the mind tacitly at the time of writing it. Both cases, therefore, seem to confirm the truth of the fact above

mentioned, namely, that perceptions and ideas may exist either within or without the consciousness ; nay, that they may be actually acquired unconsciously as mental impressions, and still may only become known and recognised afterwards.

We may trace the same general fact through all the grades of our mental development. Instinctive actions are all based upon unconscious ideas, and have on that account been often attributed to a direct impulse of the Divine reason ; actions which become perfectly habitual are constantly performed under the guidance of mental impressions, without our knowing it, until after they are completed ; what is termed common sense is nothing but a substratum of experiences.

The fact, then, of the real existence of residua, considered as a phenomenon of our mental life, cannot be doubted. The question now is, in what exact light are we to view this fact ? We cannot suppose that these residua are ever present to the mind as materials of perception, to which we can at pleasure turn our attention ; neither can we suppose that they are powers of mind which can be exercised, like any other powers, by an effort of the will. The most correct point of view, I believe, is this—that every mental act which we perform leaves behind it in the entire constitution of the man, both physical and mental, a tendency or disposition to recur. Every time that this recurrence takes place the tendency in question becomes stronger, and the links of association more widely extended. A perception which we have experienced only once, may never have the opportunity of reappearing in the light of consciousness.

In this way it is that we acquire a very strong power of perception in some particular spheres of observation, while the power remains equally weak in others ; for, wherever the mental acts have been repeated the most frequently, the mental dispositions will become the most active, and the perceptive power will consequently be the most perfectly developed. Every man becomes quick of perception in his

own particular business; for it is exactly here that he is constantly accumulating residua, and increasing the facility with which his perceptions are awakened.

The case is precisely analogous with any given kind of action which is at first extremely difficult, but which becomes more and more easy to repeat, until we can do it as a habit, without the least forethought or attention. The tendency to recur in exact proportion to the number of former repetitions—is a law which equally holds good in the sphere of our intellectual and of our active powers.

Thus we can affirm, that dispositions or tendencies towards certain ideas and activities are constantly forming, and, in proportion to the frequency of their recurrence, are intensifying the force with which they press forward again into consciousness.

CHAPTER V.

LAW OF SIMILARITY.

WE now come to explain by far the most important law which exists in connexion with the nature and structure of the perceptive faculty. We have seen already that to be conscious of a thing, it must be perceived as different from everything else. Each individual object of our perception must stand out as being distinct from the objects of those mental experiences which respectively precede and succeed it ; otherwise, it cannot be noted as a distinct thing, but would merge into the other perceptions which, in the order of time, are connected with it. A moment's consideration, however, is sufficient to show us that we are every day in the habit of perceiving whole classes of objects, such as leaves, insects, animals, flowers, which are so like one to another, that we are unable, without minute attention, to perceive any difference between them. Each one of these objects, however, having been perceived, must of necessity (according to the doctrine of the last chapter) leave its trace, or residuum, behind it. Here is a case, accordingly, in which we have an indefinite number of nearly identical residua laid up within the mind. The very similarity of the objects would naturally prevent the perception of each from being vivid or definite, and the corresponding residua must accordingly be proportionally weak and vague. The result of this would at first appear to be, to make our mental experiences extremely dim and unsatisfactory, and thus to

complicate our knowledge of external things almost *ad infinitum*.

To prevent this, we find that there is a law of mind operating from the very earliest periods of our conscious being, by virtue of which identical and similar residua blend together, so that one single mental image is formed out of the whole.

To see the working of this law in its most elementary form, hold up a small object, such as a pencil, and look at it with one eye. Then close that eye, and look at it with the other. You find, as the result of this experiment, that you have two distinct images of the object presented to you, and that these two images occupy different positions in space. The two perceptions, however, when looked at together, blend into one, and the object, which is really seen double, appears to the mind as single. This is the true explanation of double vision. It is a simple application of the law above described. The correctness of this explanation is seen most distinctly by means of the stereoscope. Two images of a thing are presented by it, as they appear in nature, to each eye of a spectator. From not being in the habit of seeing these images artificially represented, we often find a difficulty, at first, in causing them to blend into one. Fix the gaze, however, attentively upon them, and not unfrequently you can watch the actual process by which the two pictures before us melt together completely into one mental image.

Now, for a second example,—take some large object, as a cathedral or a mountain. If we only see it once, and then try to recall it, we shall probably find that the residuum it has left behind is weak and indistinct. If we gaze on it long or often, we obtain a great many different points of view; each point of view leaves its trace in the mind; and the whole of these traces blend together into one vivid and distinct mental image of the object in question. Here a very important principle is involved, namely, that when

numerous residua of one and the same object, or of similar objects, are accumulated, and coalesce, the resulting mental perception will, in ordinary cases, be strong just in proportion to the number of the residua which enter into it.

The most important application of this law of similarity occurs in the case of objects where the similarity between them is only partial. As this case requires some explanation, we shall enter into it a little more fully.

In perceiving a number of objects of the same class, we are at once conscious of a general similarity which runs through the whole ; but we observe, at the same time, a great variety of dissimilarities between one individual and another. Now, each individual object, according to the law of persistency, will leave its own special residuum behind in the mind, so that we accumulate unconsciously a large number of impressions, which, though in some respects different, yet have all a definite family likeness. Here, then, the law we are explaining comes into operation. All these residua, so far as they resemble each other, blend together, and form what we may term a generalized perception, while the remaining elements are left free to combine with any other impressions with which they may have any special affinity.

This process, by which objects wholly or partially similar blend together in one mental impression, gives us a great insight into the construction of our perceptive power. The reason why the first perceptions of infancy are weak arises from the fact that very few residua have as yet blended together in the mind, and that a new impression, consequently, has very little power of calling up any large amount of former experience. The process of combination, however, begins very early, especially in regard to those objects which are the constant materials of observation. Hence the perceptions of the child, at first dim and uncertain, soon become, with its own narrow circle, very vivid and distinct ; the more so, of course, from the limited

range of materials which occupy the consciousness. As the mind grows more mature, and the impressions more varied, our knowledge would naturally become infinitesimally minute, and proportionally confused, if there were no law by which similar residua could blend into a certain number of classified perceptions. By means of the law, however, which we are now explaining, our experiences instinctively arrange themselves under certain heads, determined by the natural similarity of the objects to which they refer. The multiplicity of our impressions thus blends into combined images, and classified perceptive knowledge is the result. Thus every new perception subsequently acquired instinctively appeals to some mass of already accumulated experience, draws this experience afresh into consciousness, and then blends with it into one. This accounts for the fact that the most fragmentary perceptions of objects spontaneously complete themselves in our consciousness. The small surface of colouring which the eye takes in when we look upon a distant church, or mountain, or landscape, awakens the whole mass of collateral experiences, and thus builds up the entire object within the consciousness, in all its minuteness and detailed reality.

Add to all this the fact, that residua manifest themselves as so many tendencies to recurrence, and the larger the accumulation of them in any given form, the stronger that tendency becomes. Hence it is that men who are passionately devoted to any given branch of knowledge find food for observation everywhere. The botanist has an eye for a thousand minute plants which wholly escape the observation of the ordinary beholder; the entomologist has the same for insects; the geologist for the appearance of the soil, the rocks, and the mountains. Wherever long observation has accumulated vast stores of residua, the least stimulus will cause them to recur, and almost every fresh object will add something to the entire mass of our knowledge.

CHAPTER VI.

CLASSIFICATION OF SIMPLE PERCEPTIONS.

THE varieties of our sense-perceptions appear, at first sight, to be almost infinite. Every moment of our waking life seems to change the scene, and offer to us some new experience. This appearance of variety, however, arises mainly from the extremely complex nature of the great mass of our perceptions. The primary elements of these are really few, and having ascertained them, we can with more advantage enter into their subsequent developments.

1. The first kind of simple perception (first in the order of time and in the elementary nature of its results) is what may be termed the general sense of bodily existence (*COENÆSTHESIS*). The nature of this is easily explained. All our perceptions originate in the action and reaction which take place between the nervous system and the mind. The very process of life, we know, occasions a certain tension and excitement of some portion of the nerves. The beating of the heart, the play of the lungs, hunger and thirst, the sense of vigour and weariness, of health and sickness,—all these, and many other undefined circumstances, imply a certain condition of the nerves in general, and more particularly of those of the sympathetic system. What we mean by common sensibility, then, is that general, and, for the most part, indefinable state of feeling which arises from our whole bodily condition at any given time. This state of feeling might, at first sight, appear to belong merely to the category

of sensation, as its name would certainly indicate ; but we must remember that no palpable line, except, indeed, for the sake of mental analysis, can be drawn between sensation and perception. By sensation is meant, of course, the bare feeling which arises from some affection of the sensory nerves. But it is the mind, after all, which feels ; and the very moment any feeling arises, some portion of its latent energy is aroused, and the mere passive sensation passes over to a mental act, *i.e.*, to an act of perception. Thus, when the mind's attention is drawn to the affections of its own organism, however indistinct they may be, there is always a perception involved in the whole process, as well as a sensation.

In the adult, this general condition of the nervous system, which we term common-sensibility, seldom comes prominently into consciousness as a distinct experience. The adult is usually occupied with other impressions or ideas, which absorb the attention, and leave no room in the mind for these minor phenomena. But such is not probably the case with the infant. No strong combination or blending of residua has yet taken place in the infant mind ; no acquired perceptions occupy it ; everything is as yet weak and indefinite ; so that the whole of the perceptions actually experienced are more allied to common-sensibility than to the special perceptions which come through any of the separate organs. As the mind becomes more mature, and residua increase, one distinct perception after another steps forward into consciousness out of the confused mass of feelings which go to make up the whole phenomenon of cœnæsthesia. After a time these specific perceptions occupy the mind altogether, and then what we term common-sensibility simply remains, as a sort of dim background of feeling, of which we only become conscious when all the more attractive impulses are for a time lulled into repose. When this is the case, it only appears to the consciousness as

filling up the intervals between our more distinctive mental phenomena.

2. SIGHT.—Of those perceptions which, in contradistinction to the phenomena of common-sensibility, stand out with some degree of special distinctness, the most important and striking are those of sight. The number of composite perceptions which develop themselves out of the phenomena of vision is almost infinite. Thus we have through the eye the varied perceptions of surface, of size, of position, of distance, of form, of motion, of rest, of solidity, and their numberless combinations ; in a word, well nigh all the primary and secondary qualities of external objects, in all their multifarious relations.

None of them, however, are simple perceptions ; they are all reasoned out by an instinctive process of logic, from the single phenomenon of light and colour. The varied shades of colour which meet the eye form the special class of simple perceptions, which we indicate generally by the term vision ; and all these, again, are reducible to the three primary colours of red, yellow, and blue. The perception, accordingly, of these three colours constitutes the primary basis on which the whole of the phenomena of vision are really built. All beside these are acquired by a subsequent mental interpretation.

3. HEARING.—The eye is, *par excellence*, the intellectual sense. Light is the figure by which we most naturally represent knowledge ; and to see a thing is used as an equivalent for understanding it. Hearing, on the other hand, is more nearly allied to the feelings. Tones of voice betoken emotions which no words can express. Music is the most natural and direct expression of feeling that we have, whether it be joyous or otherwise. As a general rule, it is by sound that we come into closest contact with sentiment and emotion of every kind.

It is not emotion only, however, that is conveyed to us

through this sense ; there are many thousands of other facts which gradually associate themselves with the vast variety of sounds we hear around us. We judge of the distance, the direction, and the intensity of a sound by an acquired facility. We can tell, in a great number of instances, exactly what the cause of it is. We are every moment guided in our judgment of men and things by the simple power of the ear. Words themselves are but sounds, and yet what a force do they possess to mould, govern, recall, and stimulate our ideas ! Still, when all these ramifications of the sense of hearing have been enumerated, we must not forget that it is the vibrations of the atmosphere, and the consequent affection of the nerves of hearing, which form the sole starting-point of the whole. All the delights of music, all the charms of society, all the power of language, all the expressions of love, pity, anger, remorse, joy, and fear, which we encounter on our way through life,—all are but the developments of the one elementary perception of sound, as conveyed to us through waves of the atmosphere, in combination with the susceptibility of the appropriate organ.

4. **TOUCH.**—The sense of touch, unlike all the rest, is not confined to any distinct organ, but is dispersed over the whole body. The simple perceptions which arise from it are also much more varied than are those of sight and hearing. Perhaps, however, they may all be reduced by a careful analysis to the two categories of pressure and heat. All the varied perceptions we have of hard, soft, rough, smooth, and their cognates, manifestly arise from the different kinds of pressure we receive from the surfaces of things. The feelings arising from a blow, a prick, a push, or any other kind of impact, are all results of pressure, but differing from the other cases in regard to the suddenness or rapidity of it. If the impact is very gentle and very rapid, it will produce the phenomena of tickling and itching ; and this again passes over very easily, as it increases in intensity, into a feeling of

burning. The phenomena of pressure, therefore, are, after all, connected with those of heat, which, as we have before shown, arises from infinitesimal vibrations impinging upon the nerves. Thus, although there seems, at first, to be such a manifest difference between touch properly so-called, on the one hand, and heat and cold on the other, yet they are really only extreme ends of one and the same series of causes, and of one and the same form of sensation. These, then, are the simple perceptions connected with the sense of touch. Their developments, as we shall hereafter see, are no less varied, extensive, and important than those of sight and hearing. More particularly is this the case in relation to the perception of resistance, or, as it has sometimes been called, the muscular sense. Some writers, indeed, have proposed to make a sixth special form of sensation out of this class of phenomena. They overlook, however, the fact that all resistance must commence with pressure in some form—that this must, therefore, be the primary perception from which our consciousness of resistance proceeds—and that all modes of resistance, and conclusions from them, are only a development of that one simple perception in connexion with the action of the motor-nerves, and the accompanying consciousness of effort as exerted by the will.

5. SMELLING.—The perception of odours is a peculiar and elementary one, and the developments which it usually experiences in the process of our mental history are not in any way to be compared with those of the three senses already referred to. This does not appear to arise from any decided incapacity which the phenomena of smell labour under to form the basis of any number of acquired perceptions. There are many qualities of bodies which we learn to distinguish by the scent more readily than in any other way. Added to this, odours have a remarkable power of recalling associated ideas, which seem to blend with them with singular tenacity, and show that they might easily

become the starting-point of a vast amount of mental activity. Were we wholly dependent upon this sense for our mental development, no doubt the perceptions we might acquire in connexion with it would be fruitful to a degree of which we have at present no idea whatever. In the case of some animals, the perceptions which come through this medium are quite equal, if not superior, to those of sight and hearing ; and there is no reason why they should not prove equally important in the process of our own mental development, but that we find a shorter road to the same conclusions through the other senses.

6. TASTE.—The last in our list of simple perceptions is that of taste. As the sense of smell is more nearly related to that of hearing, and is most readily associated with the feelings, so the sense of taste is more nearly allied to sight, and is most readily associated with our ideas. The elementary experiences connected with this sense are but few. They may all be reduced to the four perceptions of sweet, bitter, acid, and salt. These four perceptions enter, of course, into innumerable combinations, and become associated by experience, like all the rest, with a vast variety of qualities, which they then reveal to us with almost unerring accuracy.

Our list of simple perceptions is now complete. Colour, sound, pressure, heat, scent, taste, and the indefinable consciousness of our bodily state, form the groundwork on which the whole immense fabric of our perceptive life is built up. It must not be supposed, however, that all our perceptive knowledge is formed simply out of these materials. This would land us in complete sensationalism. Neither do we hold, on the other side, that there are any ideas in the mind previous to the processes by which they are, in fact, constructed. The precise definition of the relationship which exists between the percipient mind and the thing perceived gives the whole tone and complexion to our philosophy ; and

on this account we wish to make it as clear and intelligible as possible.

Let us return, then, to the analogy of nature in her lower operations. We do not say that the seed of the plant contains the blossom or the fruit, on the one hand ; nor, on the other, do we imagine that the actual material which the plant absorbs from the air and the soil can form them independently of the peculiar life-principle which is inherent in every seed. In the same way, the primary cell does not contain the members and organs of the perfected animal ; neither can the nutriment which is absorbed in the process of development construct them by any mechanical process without the spark of vitality by which the entire nature of the growth is regulated.

Just so is it with the mind. Neither its ideas nor its faculties are innate ; they do not exist at all in the primary germ. On the other hand, the material by means of which they are constructed must be supplied from the outer world. This material, however, has to be assimilated ; the germ of mental life, first granted by the Creator, must co-operate in the whole process of growth ; by its means, the phenomena given in sensation must be grasped and retained—nay, must be woven, as it were, into the tissue of consciousness ; and thus, not only our ideas, but our mental tendencies, habits, powers, and faculties, must all be successively constructed.

CHAPTER VII.

PERCEPTION IN RELATION TO THE EXTERNAL WORLD.

NONE of the simple perceptions which we have enumerated in the last chapter give us any direct knowledge of the external world. All the primary phenomena of colour, sound, pressure, scent, and taste, might come to the consciousness, and yet, if no further mental action were awakened by them, they would never lead us to form any notion of an objective material existence. The mode in which what has been aptly termed a world-consciousness springs out of our primary consciousness, and develops into all the varied knowledge we gain perceptively of external things and their divers attributes :—this has yet to be carefully analyzed and explained.

All our perceptions of external things are connected with the consciousness of their existing in time and space. We cannot regard objects either as co-existent, or extended, without involving relations of space. We cannot regard them as successive without involving relations of time. But what is time, and what is space ? These questions have always been two of the most knotty points in metaphysics. By some, time and space have been regarded as simple perceptions ; by others, as innate ideas ; by others, as pure intuitions ; by the Kantian school as the *a priori* forms of sensation.

Leaving all these theories for the moment on one side, this much is evident, that, as we are constituted, time-and-space

perceptions do uniformly and of necessity come to us, as our natural faculties unfold. Whether, however, they are innate ideas, or forms of sensation, or anything else of a purely *a priori* character, is not positively affirmed in this admission.

There is no proof, at any rate, that the relations either of time or space exist as ideas in the mind previous to experience ; neither is it evident they are universal and *a priori* forms to which all our sensations must bend. Tastes and scents do not appear to have any necessary connexion either with time or space. They have no extension, neither do they come to us in any distinct series. Sounds exist only under the relation of time ; colours, for the most part, only under the relation of extension ; while touch alone can grasp objects under the relation of solidity with three dimensions. None of these points, it is evident, are at all explained by saying that time and space are the forms, the one of the inner, the other of the outward sense.

The whole question is, in fact, still fairly open to investigation ; since neither the *a priori* nor the Kantian theory has been able to challenge or to gain anything approaching to a universal consent ; and, if we can clearly trace the genesis of those ideas as necessarily acquired perceptions, we may rest as fully satisfied of their validity and their universality as if we were to adopt the most explicit *a priori* theory.

Great difficulty has always been felt in explaining the nature of perception in reference to the outward world, from the opposition which exists between the qualities of mind and matter. Whatever metaphysical theory we may adopt in explanation of these two terms, the fact remains the same, —that to mind we attribute one set of properties, and to matter another. So opposed are these properties, moreover, to each other, that we find it almost impossible to conceive how any community of action or reaction can take place between them. To the one we attribute all the relations of

space and body ; to the other the varied phenomena of sensation, thought, and volition.

If we consider the manifold activity of the world around us, every change which occurs is a change in place ; if we consider the activity of the mind—here, indeed, we still find that relations of time hold good ; but the relations of space altogether disappear. There is one thing, however, which still remains common to both, and that is the idea of activity itself. Mind acts, and matter acts ; mind changes, and matter changes. If we ask next what we mean by the actions and changes of the material world, we find that they all resolve themselves into motion. The action of gravitation is known only by the motion of planetary or other bodies. Chemical and organic action is accounted for in the same way, *i.e.*, by the motion of particles. If you ask how one kind of motion is caused, it can only be answered by holding up another, of a more recondite and primitive nature. All change resolves itself into the motion of particles or of masses : and without motion no kind of change or activity in the material world would be conceivable.

Turning from the activity of external nature to that of mind, we find the idea of motion by no means presenting the same degree of irrelevancy and opposition which is true of all other material properties. The mind is conceived of as something which possesses the power of motion in the highest degree. Nothing is swifter than thought. Our minds can pass from one point of space to another, and think of objects in the remotest and most distant regions with the utmost facility. Compare any object in motion, first as it exists in nature, and then as it represents itself to thought, and there is a marked analogy between them. How can we conceive, for example, of the motion of a planet in its orbit ? Only by passing in thought round the same pathway. The motion, which the planet itself exhibits in

its course, must be mentally repeated, in order that that which exists in nature may be reproduced in thought.

Motion, then, may be regarded as a kind of common ground on which mind and nature can meet. We have thus got a starting-point from which a comparison can be instituted between the properties of body on the one hand, and mental phenomena on the other. The very first awakening of consciousness, as we before saw, is produced by the change from one state to another ; and this very change must involve motion mentally considered. It is a mental phenomenon which stands in as close analogy as any mental thing can stand to the change of phenomena in the external world ; that is, to motion externally considered.

Now let us return to the physiological view of the question, and see how this coheres with the above analysis. In our former analysis of sensation we found that the only way in which the external world affects the nervous system is by means of motion. Light is motion ; sound, motion ; heat, motion ; touch, motion ; taste and smell, all motion. The world is known to sense simply by virtue of, and in relation to, the motions of its particles ; these motions are appreciated and continued by the nervous system, and by it are brought at length to the mind's perception. When the mind reacts in its turn upon the world, it does so wholly through the nerves of motion. The last material action we can trace in every process of sensation, previous to its entering the abode of consciousness, is motion ; the first reaction we see as it emerges from the abode of consciousness back into time and space, again is motion. The conscious interval is filled up with what is analogous to motion, *i.e.*, with the change of consciousness, which takes place within us.

We find accordingly, 1st, that motion holds in thought the common ground between mind and nature ; and, 2ndly, that the same view of it is confirmed by all that physiology teaches us of the manner in which the external world acts

upon the nervous system. We have next to show that, logically speaking, time and space are generated by motion, and come into the consciousness as the direct result of the experience which the mind possesses of change in relation to its own phenomena.

And first with regard to time—the dependence of this idea upon motion has been more or less admitted and affirmed by philosophers from the earliest times downwards. “Our “conception of time,” says Aristotle, “originates in that of “motion ; and particularly in those regular and equable “motions carried on in the heavens, the parts of which, from “their perfect similarity to each other, are correct measures “of the continuous and successive quantity called time, with “which they are conceived to co-exist. Time, therefore, may “be defined—the perceived number of successive movements ; “for as number ascertains the greater or lesser quantity of “things numbered, so time ascertains the greater or lesser “quantity of motion performed.”

This is, in fact, nothing more than the doctrine of Locke and so many other acute analysts, that the perception of time depends upon the succession of our ideas. Externally, time is measured by the succession of events ; internally, by the succession of ideas. In both cases it is by means of motion, first in its physical and then its mental acceptation, that the perception of time originates. Without a conscious succession of ideas we could have no notion whatever either of the flight or duration of time ; and in like manner, without a succession of movements external to ourselves, we could have no measure of time as an objective reality. In relation, therefore, to thought on the one hand, and the outward flow of events on the other, time is generated by motion, and but for this would never exist as a fact either subjectively or objectively.

With regard to space, the case is not at first sight so apparent. If we consider, however, in what manner we come

to realize the idea of a line or a surface, we shall find that it is done in the same way as we before showed in the case of a planetary orbit ; that is to say, we must move along the line or over the surface mentally, in order to realise them externally. A line is generated in nature by the motion of a point, and a surface by the motion of a line. In like manner, if we want to conceive of any given line, we can only do so by moving along the same direction in thought ; and if we want to conceive of any given surface we can only do so by passing in imagination all round it. In every case it is motion which generates space, and only as far as motion extends can we have any idea of space whatever.

And this, again, coheres with the physiology of the case. Not one of the senses can give us directly the slightest experience of extension or body. The eye gives us merely the phenomena of colour, which might as well arise from a mere internal affection of the optic nerve as from any real surfaces or objects around us. Touch is a simple feeling, which, prior to the teaching of experience, contains no notion of, or resemblance to, the thing which affects us. In a word, none of the phenomena conveyed through the nerves of sensation have originally the slightest connexion with any notion we may form of an external world, or of the relations of space. The way in which the mind passes out of its own subjective sphere into the world of space and body is through the instrumentality of the motor system. No sooner is a sensation produced than the motor nerves are impelled from within to respond, to carry their inquiry as to the disturbing cause back to the point from which it proceeded, to investigate the nature of that cause.

That it is by means of motion that the perception of space is produced is clearly shown in connexion with the sense of touch. The mere feeling of a pressure, or a blow, or a puncture, or any other mode by which this sense is affected would arouse nothing approaching to the perception of out-

ness ; but no sooner does the motor system come into operation, no sooner does the mind begin to inquire and feel after the thing affecting it, than the elements of an objective consciousness begin to appear. If the pressure or blow affect some part of the body, such as the back, where there is no effective motive power existing, the bare feeling produced by touch can hardly at all pass over into the perception of extension or body ; but if we can reach the object with the hand, and move that organ along and around it, the consciousness of extension and body appears. The finer and more delicate the motive power of the organ the more readily can we estimate the relations of space and body. On this account it is that we perceive space by the eye and the hand, and not by the ear or any other sense. The eye and the hand possess the most perfect motive power of any of the organs of sensation ; and we shall show by our succeeding analysis that it is precisely by means of these two organs, and precisely on account of their power of motion as organs of the mind and the will, that the perception of extension, surface, body, and the cognate ideas are generated in the natural course of our mental development.

CHAPTER VIII.

PERCEPTION OF SPACE.

THERE is one important point in which the organs of sight and touch differ very essentially from those of hearing, smelling, and tasting. It is this,—that in the three last-mentioned cases we can only receive one complete sensation at a time ; whereas in the former two we can have a variety of sensations brought home to the consciousness contemporaneously. It is true that we perceive a great many sounds by the ear at once. But, then, they interfere largely with each other and the main result is, that we experience a kind of mixed sensation, in which the whole of the elements affecting the organ are blended together into one phenomenon. Still more completely is this the case with taste and smell. For here, however compound the cause of both may be, the result to the consciousness is one and indivisible. This arises from the fact that every sound, every scent, and every taste, which we experience challenges and occupies the whole organ, and the entire nerve-apparatus with which it is provided. On the other hand, in the case of sight and touch, the nerve-points are so separated and independent of each other that a great variety of objects may affect them at the same moment, and each affection may reach the consciousness as distinctly as though there were no other to occupy the mind's attention. This is one of the first particulars which have to be noticed as giving a peculiar aptitude of the senses of sight and touch, to become the mediums for awakening the perception of space.

It will be necessary for us, however, to go into a closer analysis of the process of space-perception before we can get anything like an adequate comprehension of it.

And first, we must consider this process as it is connected with sight. If every individual portion of the nerve-expansion on the retina was equally affected by every ray of light that enters the eye, and the same image was formed at the extremity by every one of the nerve-fibres which reaches the surface, the law of similarity would at once come into operation, and these manifold images would blend into one common result. This, however, is not the case. An extended image of the whole field of vision is thrown by the mechanism of the eye upon the retina; and each part of the nervous expansion receives only its own individual part of the whole impression. There are two things which prevent all these different parts from blending into one indivisible result. First, the colours themselves differ; so that the law of similarity is at once impeded by the actual variety of the phenomena; and, secondly, even supposing that the difference in the impressions on different portions of the retina were not so great as to prevent the law of similarity taking effect, yet there is another important hindrance which presents itself. The eye is so formed, that only one point at a time in the whole field of vision can be seen with perfect distinctness. The point to which the axis of the eye is directed is apprehended with entire clearness; but all the other portions of the retinal picture shade off into indistinctness, becoming more dim and undefined exactly in proportion as they become more distant from this central point. Hence, as regards distinctness, there is an infinite variety in the different portions of the whole phenomenon, which also acts as a strong counteracting influence to the tendency they would otherwise have to blend together into one indivisible feeling. Accordingly, we have arrived so far on the way to the perception of space, that the mind is made conscious of a

great number of different phenomena, which appeal to it, not in succession, but quite contemporaneously; and which remain so distinct that they resist all our efforts to combine them into one common perception.

But, then, the question comes, Why should we be induced to project these phenomena out of ourselves, and place them before us as so many separate positions in space, or as forming an extended surface apart from our own consciousness? Here the effect of motion again comes in to aid us in generating the space-perception.

The eye is formed with the most delicate power of moving in all directions. As only one point in the field of vision is perfectly clear, the eye passes rapidly from point to point, until, by the power of memory, or (what is the same thing) by the persistency of the impressions, each part of the entire surface is apprehended at once with about the same conscious clearness. Had we the power of generating the phenomena of vision for ourselves, as they appear at each point in the field of observation, we might regard them still as a rapid succession of mere subjective mental conditions; but this is not the case. All we are conscious of, as coming from our own volition, is the motion of the organ; but every fresh motion is accompanied, without any further effort of our own, with a distinct and a varied experience. As the mind, therefore, is one and indivisible, and as all its states assume the form of a succession or series, it cannot possibly become conscious of a multiplicity of co-existing phenomena under any idea of their being modes of its own existence. Hence as the eye moves from point to point in the field of vision, it must of necessity regard them all as standing apart from itself, and as forming an extended surface, in which these several points (already known as co-existing) form relative positions in space. The motion itself is not an objective phenomenon; it is, in fact, to us, purely subjective. Every single movement implies a contraction

or expansion of muscles, and every muscular effort implies an inward power of the will. But when each movement is accompanied by a distinct phenomenon in the field of vision, which regularly recurs each time the movement is directed towards it, such a result would be utterly inconsistent with the unity of the soul, were not the whole of these phenomena projected out of ourselves, and regarded as co-existent positions in space. To this it might be objected, that it is impossible to imagine any such process of reasoning to take place at so early a period, and that the space-perceptions must of necessity be instinctive and intuitive. This objection, however, overlooks the existence of the preconscious activity, which we have already shown to be a great fact, of mind.

That this view of the case is correct may be tested by the effect produced upon us, when images are generated by disease in the optic nerve. If we find the same phenomena always making their appearance, to whichever side we turn the eye, we instinctively attribute them to some subjective impression generated by the mind itself under certain organic stimuli. If, however, there is a regular recurrence of the same phenomena with every similar movement of the eye, we instinctively feel that they must arise from a source external to ourselves.

If we go from the organ of sight to that of feeling, a precisely analogous process takes place. Here the whole data, by which we judge of extension, surface, or any of the space relations, are given simply by the muscular system,—not in the slightest degree by the nerves of sensation. Those parts of the body where motive power only exists to a small degree, however sensitive in other respects, give no assistance towards the production of our space-perceptions. The principal organ by which we judge of them, in connexion with this sense, is the hand,—just because the hand possesses the most highly developed muscular sense. We move the hand over a surface, and become conscious of co-

existent phenomena, just as we do by the motion of the eye. The same instinctive conclusion again takes place. We cannot think of a number of co-existent phenomena, as forms of the inward consciousness; mind is one, and cannot be conceived under the idea of multiplicity or divisibility. Hence we are constrained to think these phenomena as existing apart from ourselves; we range them side by side with each other; and, as the hand moves from one to the other, we generate the notion of space or extension, as being that which is measured by the motion, and marked off by the co-existent positions of the phenomena.

Taking, then, the perceptions of time, space, and motion, we find again that the last is the real starting-point in the history of our mind's development. The perception of motion does not necessarily involve that of time or space, as it arises simply from a certain exertion of the muscular system, and can assume, as we before showed, a purely subjective as well as a purely objective form. The perception of motion, however, once gained, time and space immediately follow. Time is the measure of motion internally; space is the measure of it externally. As every mental phenomenon, coming as it does, in the series of consciousness, involves a relation of time, and every one of the muscular movements, by which we are connected with the outer world, involves a relation of space, we cannot wonder that time and space should present themselves to us as universal forms of sense, and appear to be co-extensive with the entire field of our experience. In reality, they are acquired perceptions; but they are acquired so early, and substantiated by such an infinite number of repetitions, that they have imposed upon a large portion of the thinking world to write them down as innate ideas, or *à priori* elements of all our knowledge.

CHAPTER IX.

FURTHER DEVELOPMENT OF THE SPACE-PERCEPTIONS : PERCEPTION OF LINE, SURFACE, FIGURE, BODY.

BEFORE we proceed to the further development of the space-perceptions, it will be well to recapitulate. When the human being is brought into the world, and placed in the midst of the numerous influences which affect the bodily organization, its first consciousness can be nothing but a confused mass of indistinct impressions, which we call *coenæsthesia*, or common sensibility. The infant is born with a bodily frame, and a nervous system, immature, indeed, but still complete. The first perceptions would naturally be those connected with a certain tension of the muscular system ; for the primary sensations we experience would, of course, produce some reaction, this reaction instinctively sets the motor-nerves and muscles in operation, and the tension thus produced in the limbs and organs generally must be the earliest and simplest of all our elementary perceptions.

These perceptions, however, can only be of a purely subjective nature. To the infant consciousness no external world is yet in existence.

The passage from internal to external perception is formed by means of motion. All muscular action is accompanied by motion. The motion of the eye or of the hand soon reveals a number of phenomena, which do not take the form of a succession, but of a combination of experiences strictly co-existent.

This multiplicity of co-existent phenomena, then, we cannot attribute to the mind itself, since it has no relationship whatever with purely mental phenomena. We are obliged, therefore, to think it as existing out of ourselves, and we thus gain what is really the first germ of the perception of extension or space. The elements of this perception, accordingly, are simply a number of co-existent points, which will not blend into one undivided image, but which remain standing, in perpetuity, grouped by the side of one another.

So far we advanced in the former chapter ; we have next to see how this elementary form of space-perception develops into the perception of lines, surfaces, figures, and, lastly, in the perception of body.

We begin, then, with the perception of a line. This is produced by motion in its simplest form. The eye or the hand moves along from one point to another, and at every instant a new phenomenon is presented. These phenomena all leave residua behind them, so that the whole series can be reproduced together, and thus assume the character of a continuous and co-existent series. This series of co-existent phenomena, then, is the basis on which the perception of the line rests ; for, as the organ is ever in motion, it must be constantly passing along series of this nature, and, in process of time, the mind will disregard the actual phenomena, individually considered, and abstract what is common to them all, namely, the linear form which they alike assume. A line, therefore, can hardly be called a perception, in the strict sense of the word ; it is, rather, the common element in every continuous series of phenomenon, a contiguous row of points, when the points become the mere symbol of phenomena which no longer occupy the mind individually.

The perception of a surface is produced by motion of a more complicated kind. The eye and the hand alike have

the power of moving in every direction. Each movement from one point to another generates the perception of a line, and the lines thus described cross one another in all directions, as the motion of the organ varies. Thus we form a kind of web or network of impressions, which fulfils the condition of producing some sensation at any given point whatever. Such a network we term a surface, for the surface differs from a given measurement of space by being filled with the material of perception, at every single point.

The next of our space-perceptions which demands explanation is that of figure. Figure is a bounded surface. Where there is, in relation to the visual consciousness, perfect uniformity of colour, no figure can exist, because no boundary can be distinguished. The eye, in passing over a given surface, is suddenly arrested by some change in the character or colour of that surface. It is at once thrown back by this obstacle, and moves in another direction, until the same thing occurs on the opposite side. As soon as the eye can travel all round the boundary thus formed, there is a figure cut out of space, which presents itself to us as a definite perception. The perception of figure, therefore, depends on motion, as well as all the other space-perceptions. The eye at rest cannot, strictly speaking, see form at all ; it is only conscious of it by moving round the boundary, and noting how the whole figure is cut out from the circumjacent space or surface.

Let any one try the experiment for himself ; let him look at a peculiarly shaped house, or tree, or mountain, and attend to the process by which he takes in and realizes the figure presented. He will find that his eye is secretly travelling all round the limits, and that it is only when it has done so sufficiently that the figure is truly realized. Even smaller forms, which we appear to see at once, are really apprehended in the same way, although the motion of the eye is more difficult of detection in such cases.

We are now prepared to pass on to the perception of body. Here a new element is introduced. The line has only one dimension. Figure and surface have two. Body has three dimensions, and requires, as we shall see, something more than the mere motion of the eye to generate it. We already showed that the primary sense-perceptions we experience are those of muscular tension. This tension gives rise to motion, and motion, free and unimpeded in any or every direction, generates the perception of lines, surfaces, and figures. In the course of these experiences, we become familiar with phenomena viewed as objects out of and apart from ourselves. Now, we will suppose that the motion we have already regarded as free and unconstrained is arrested. The hand, which is accustomed to move freely in space, strikes against some obstacle. Here a new experience is produced. The muscular tension, of which we have been conscious from the first, passes over to the feeling of resistance, and this feeling of resistance is accompanied with the perception (perhaps by the eye) of an objective phenomenon. Put the two experiences together, and we have a surface out of and apart from ourselves, which is accompanied with the feeling of resistance to muscular effort.

Two things are thus brought to light in connexion with one another. The first is, the perception of a resisting medium out of ourselves ; and the second is, the perception of our bodily organism as being a medium of this nature, only under the control of our own will. The perception of body, then (whether our own or otherwise), arises from the feeling of resistance to muscular effort, accompanied by the perceptions of surface and figure already required ; and every form in which body is known is made up strictly of these few simple elements. Whether the objects presented be hard or soft, rough or smooth, elastic or non-elastic, they all are known by different kinds or degrees of resistance, accompanied with the perception of lines, surfaces,

and figures external to ourselves. This primary knowledge of body acquired through the perceptive faculty, we need hardly say, does not involve any idea of substance, which is an abstraction formed afterwards by more purely intellectual processes.

CHAPTER X.

THE MEASUREMENT OF SPACE : PERCEPTION OF DIRECTION, SIZE, DISTANCE.

WE have now traced the formation of all the space-perceptions properly so-called, *i.e.*, first, of extension generally ; then of lines, surfaces, figures ; and, lastly, of body. All these, we have seen, are really acquired perceptions.

We come next to the measurement of space, that is, to the perception of direction, of size, and of distance. In these cases it is by no means so difficult to trace the process of formation as in the last ; and the dependence of all our judgments in respect to them upon a body of acquired experience becomes far more manifest and indisputable. We know, for example, that we can perceive the size and distance of objects far better where we have been accustomed to observe them than where we have not. A man accustomed to a level country cannot judge either of the size or distance of natural objects when he first travels amongst mountains ; neither can a landsman judge of them at sea with the same accuracy as a sailor.

Moreover, we have the means of making special experiments, that do not leave any doubt as to the acquired nature of all such perceptions. Cases have occurred in which the blind have been almost suddenly restored to sight. In every instance of this nature there appears a total incapacity to judge either of size, distance, or figure. Objects seem at first to touch the eye ; and an entire landscape appears

only like a variegated surface unrolled before it. Even children, though they are accustomed to use their eyes from birth, are for a long time incapable of measuring size or distance.

1. We begin with the perception of direction, by far the most simple and elementary judgment of the three. It has generally been maintained by physiologists that we judge of the relative position of objects by means of the muscular feelings which are experienced in turning the direction of the eye from one point to another. That this, however, is not a complete account of the causes which are in operation, is pretty clearly seen from the facility with which we judge of the relative position of objects, even in a very extended field of vision, without any muscular effort at all being made in order to change the direction of the pupil. The researches of Dr Serre have shown that we always perceive the different objects which lie in our field of vision, in lines of direction drawn from the corresponding parts of the retinal image, to a given point lying a little behind the crystalline lens,—the point, namely, at which all the axial rays cross each other. In this way every point in the extended surface of the retina becomes associated with some given direction, and every object which is perceived upon any given point in it is instinctively located accordingly. Various experiments combine to prove the accuracy of this view. For example, when a person is operated upon for squinting, and the direction of one of the eyes is changed from its accustomed position, he always sees objects double for a time. The corresponding points on the retina of the two eyes, which had come to be associated with a given direction, do not now coincide, so that one eye locates the object in one place, and the other eye in another. The consequence of this, of course, must be a twofold image of the object itself. This result usually lasts until the associations have time to be reconstructed; so soon as this is accomplished, single vision

is again restored. It is precisely for the same reason that a person pretty far gone in intoxication sees things double. The effect of intoxication, while it lasts, is to deprive the motor nerves of the control they usually exercise over the muscles. Hence a drunken man cannot walk straight, and if he uses his arm and hand for any purpose, the motion is unsteady and uncertain. In the same manner he loses control over the muscles which regulate the movements of the eye-balls in the socket, so that the axis of vision in the two eyes does not remain parallel. The same result as we before explained consequently ensues; objects of vision strike the two retinas upon points which do not correspond with each other, so that the one eye suggests one direction and the other eye another, and the phenomenon of double vision is again the natural result. The former of the experiments above mentioned is particularly instructive, inasmuch as it not only shows the manner in which we judge of the direction of an object, but also proves that this judgment is formed by experience, and when disturbed by any cause, which alters the position of the eye, can again be restored by a new series of associations.

2. We come next to consider the way in which we measure the distance and size of objects. What we have to show is this—That the sense of sight only acquaints us with apparent distance and apparent size; that real distance and real size can only be known by a more complicated experience, in which the sense of touch and the results of motion combine with vision.

Let us begin with the perception of distance; and regard the question first in connexion with a monocular vision. The image which a landscape, or a solid body, throws upon the retina of a single eye, is perfectly flat; all the rays of light, whether they come from a nearer or more remote part of the field of vision, being alike received on an even surface. The only difference observable is the difference of colour, and

the greater or less clearness in the minute details of the objects perceived. Accordingly, had we no experience to guide us, we should have no notion whatever of the relative distance of one part in relation to another. In the course of experience, however, we have come to know that certain lights and shades—a certain distinctness or indistinctness of detail—and certain peculiarities of form and outline, indicate a different distance in the object perceived. More particularly does our own movement to and from the objects around us enable us to estimate distance; and the variations of vision produced by the variations of distance are consequently being always illustrated and tacitly worked up into our mental experience. Hence, when we look at an object even with a single eye, the colours, shades, and forms presented to us are instinctively judged of in accordance with the experience already laid up in the mind; or, to speak more strictly in the language of psychology, they combine with similar residua already acquired, and produce in the consciousness of the moment a mental result made up of the present phenomena and the past, which taken together enable us to judge of the distance of the object, in ordinary circumstances, with some approach to accuracy.

We shall explain this view of the case by giving a number of experiments by which its correctness may be fully tested. Let any one hold a pen or long knitting-needle at one extremity, and attempt, with one eye closed, to touch the point of another, held uprightly, with the other end, and he will almost assuredly fail until a few trials have enabled him to measure the distance.

Take a common pasteboard mask; paint the inside of it so as to make it resemble as nearly as possible the outside; and then, placing a person four or five feet before it, with his back to the light, hold up the concave side before him. If both eyes are open, he will at once see what the thing really is; if one eye, however, is closed, there will be twenty

chances to one that he will see it raised or projecting instead of concave. The reason is, that, not being able to measure the distances of the different parts with one eye, he will instinctively interpret the phenomenon presented according to his former experience, and regard it as an ordinary mask. If the object be one which we have been accustomed to see as frequently on the concave as on the convex side, then experience tells equally both ways, and we can see such objects either convex or concave, according as our volition prompts us to imagine them at the moment. Again : if we take a mask, and attempt to convert the relief into its opposite concave, we cannot do so at all without first having become familiar with the latter, and then only with considerable trouble ; while, lastly, if we attempt to turn a human face into the concave, we can positively never succeed, inasmuch as there is no experience whatever to tell us what aspect such a thing would present.

All these experiments, which any one can easily try for himself, most perfectly illustrate two things :—1st, that in monocular vision we have no perception of distance at all, except what is formed by experience gained by the aid of the other senses ; and, 2ndly, that our complex perceptions of objects are all formed as described in a former chapter, viz., by means of the blending of the residua, which are recalled into consciousness by the presence of new phenomena, and then enter largely into the judgment which the senses form respecting them.

There are some circumstances in which the defect we have pointed out in monocular vision becomes a help, namely, when it aids the delusion we wish to produce in representing a solid object upon a plane surface. It is known to most persons how much more life-like a good painting becomes when gazed at with one eye only ; and, in the case of good photographs, where the light and shade is very marked, any one may convince himself by a few trials that, looked at from

a short distance with one eye, they assume all the solidity which is seen ordinarily only by means of the stereoscope. The more our experience has been already enriched by the real scenes which sun-pictures represent, the more vividly do we see them in relief ; for every case of perception, as we have repeatedly shown, is a complex process, in which the already existing residua play a most important part.

We come next to the perception of distance by means of binocular vision. When we look at distant or solid objects with two eyes, we judge far more readily both of their distance and their solidity than with one. This may, of course, be partly due to the fact that we are more accustomed to see things with both our eyes than with one ; so that the experiences we have of objects thus viewed is more extensive and precise. This, however, is not everything. When we look at any object at a little distance from us, the axes of the eyes are made to converge upon it. If the object be drawn nearer, the convergence is greater ; if put farther off, the convergence is less, until after a time the two axes become virtually parallel. The alteration of the direction of the axes is performed by muscular contraction and dilatation, and the muscular feeling accompanying the change is undoubtedly one element which enters into our perception of distance. The influence which such muscular feelings have upon our judgments will be illustrated more particularly when we come to speak of the perception of size. Not that we know anything naturally respecting the alteration of the axes of two eyes, or ever take it consciously into account in judging of distance. All we mean is, that the muscular feelings accompanying such alteration become instinctively interpreted by experience into terms of distance by the observing mind.

The principal means, however, by which we are enabled to judge of the distance and the solidity of objects in

binocular vision is undoubtedly derived from the twofold image which is produced,—one on each eye. Many disquisitions have been written respecting the phenomenon of single vision by two eyes ; but, before the inquiries of Professor Wheatstone were published, it never seemed to occur to any one to ask what especial end this twofold vision really answered. Every one knows that the two eyes always give two different aspects of every object they gaze at. One eye sees it a little more on the right hand side, the other a little more on the left hand. Why these two images enable us to mark the distance and judge of the correct relief of objects placed before us better than could be done by single vision, it is, perhaps, not easy to explain ; but such is undoubtedly the case. Professor Wheatstone, reasoning from this fact, concluded that if we could see two pictures of an object at once, and drawn exactly as they appear to each eye in binocular vision, they ought to blend into one, and that that one ought to appear perfectly solid as in nature. The practical result of this reasoning was the invention of the stereoscope, which verified the truth of the argument, and gave the most convincing proof, that it is by means of the double image that we are enabled to judge of the distance and relief of objects. It does not follow that, even in the case of binocular vision, we proceed in our judgments by any intuitive mathematical rules. The most probable exposition of the case is this :—We learn by experience that there is only one form, viz., the solid, which can possibly give the two dissimilar projections that are cast upon the eyes ; we consequently combine these two mentally into one by the law of similarity, and that one shows us the solid object itself, as perceived in ordinary vision. In this case, therefore, equally as in the case of monocular vision, the two phenomena actually presented merely suggest to the mind a certain reality, which differs in fact materially from either of them ; and it is only by the aid of its previous experience that the mind adopts

this reality, as being the actual fact of the case, and the true explanation of the phenomena presented.

3. The last point which remains to be explained is the manner in which we perceive magnitude. If we look at an object twenty yards off, and then approach ten yards nearer, the apparent magnitude is enlarged one-half ; if we approach five yards nearer still, the apparent magnitude is four times greater than it was at first ; and yet, notwithstanding this, our mental judgment respecting the real magnitude remains precisely the same throughout. It is evident from this, that there is some method by which we correct mentally the difference in the apparent magnitude of objects when seen from different distances.

This correction, in the case of more distant objects, is purely experimental. We judge by a variety of circumstances what is about the distance at which the object stands from us, and, according to the estimated distance, we calculate instinctively what the real size ought to be. It is needless to say that these calculations are never very accurate, and are often disturbed by a great variety of causes. For example, on a very clear day, when a distant range of hills is remarkably distinct, we imagine it, from the very fact of its distinctness, nearer than it really is, and the estimated size diminishes accordingly. For the same reason, objects seen through a fog are rendered to our perceptions much larger, the estimated distance being greater.

When we come, however, from distant to near objects, a new element of judgment comes into play. In viewing distant objects, the axes of the eyes are virtually parallel, and no appreciable convergence takes place whether the object be brought a mile nearer or not. But, in a near object, the axes of the eyes must be brought to converge directly upon it, and, in proportion as it is brought nearer, the convergence must increase. This feeling of convergence

is the principle element which enters into our judgments of magnitude in the case of near objects. To illustrate this, Professor Wheatstone has invented an ingenious apparatus, in which, by means of a simple contrivance in connection with his reflecting stereoscope, the eyes are made slowly to converge upon a picture, while the picture itself is kept always at the same distance. The result of the experiment completely proves the close relationship between the feeling of convergence or divergence in the axis of the eyes, and the perception of distance, and consequently of magnitude also. As the eyes, it will be understood, are made to converge by means of the angular change of the reflectors, the apparent size of the picture gradually diminishes ; while, in proportion as they are made to diverge, the apparent size swells out to the extraordinary dimensions, the actual magnitude remaining all the while precisely the same. The whole process which takes place may be thus summed up : first, by changing the angle of the reflectors in which the picture is seen, the eyes of the beholder are made to converge or diverge as the case may be ; this convergence or divergence is instinctively interpreted by the mind into terms of greater or less distance ; and then, lastly, the size of the objects is mentally adjusted according to the distance at which we imagine them to be placed. Here, accordingly, we see again the same two elements at work : 1st, motion, as the fundamental basis of all our perceptions, whether natural or acquired ; and, 2ndly, experience, which reduces the changes produced by motion to certain instinctive rules, and tells us what effects we ought to expect to be produced by the motion in every given case.

Thus, every individual perception in connexion with the measurement of space is really learned by experience ; and the acquisition is made through the accumulation of those innumerable residua, which form the basis and mental tissue of the entire perceptive faculty.

CHAPTER XI.

PERCEPTION COMPLETED.

WE have now gone through all the various elements of which our perceptions consist. We have shown that they commence with the very first comparison we can make between two simple feelings; for example, between two different states of muscular tension, or common sensation. After these come the perceptions, which are produced by means of the special senses. By the agency of motion (as being the common element of internal and external change)—motion connected with the eye and the hand, we pass from internal to external perception, *i.e.*, we project the phenomena out of ourselves, and view them as extended, and, consequently, as occupying space. Starting again from this new experience, we go on to acquire all the more complicated space-perceptions, those of lines, surfaces, figures, &c. Next, we add the various modes of resistance gained through the sense of touch, and, combining these with the space-perceptions, we form in this way the perception of body. After these come the various combinations by which we are enabled to measure space, *i.e.*, to form the perceptions of direction or position, of distance, and of magnitude. We have shown, moreover, that all these perceptions are constructed, from the very first, by the regular addition of experience to experience, or, in other words, by the accumulation of residua, just in the same way as the organs of the body are formed by the addition of cell to cell; and, finally, we have shown that the whole process

of development takes place by the twofold law of attraction and repulsion ; that it is by the blending of similar residua that our more generalized perceptions are formed ; and by the refusal to blend, on the part of dissimilar residua, in connexion with the motion of the organs, that we are led to construct the notion of extension, and the space-perceptions generally.

It is hardly necessary to say that, in ordinary life, we rarely or never experience any of these varied perceptions alone ; they crowd in upon us on all sides, and arrange themselves, for the most part, in clusters, as seen in the ordinary objects around us, distinguished by their manifold attributes. To understand, then, how the perceptive faculty is completed, we have now only to trace the mode in which these various elementary perceptions are combined, and how they give rise to the apprehension of those complex objects which form the material of our daily observation.

And, first of all, we must point to the fact that, of all the perceptions above enumerated, those which come through the eye are most vivid, and occupy, naturally, the most prominent place. Besides this, it is by means of the visual perceptions that the space-relations are most readily observed and estimated. Hence, when an object, with many attributes, is presented to us, the leading feature is that which is taken in and judged of by the sense of sight. It is this which places it before us, as an objective reality, apart from ourselves and our own mental feelings, and is, therefore, the centre around which all the other attributes cluster. After the visual perceptions come, generally, those which are communicated by the sense of touch. That is, after we have viewed the phenomenon presented as being a substance of a given size, shape, and colour, we next begin to judge of its hardness or softness, its bulk and solidity, &c. After this come its scent, its taste, and its power of producing sound. All these cluster around the visual attributes as their middle

point, and form the complex perception of the entire object.

These, however, do not by any means exhaust the elements which enter into the perception of most objects around us. In addition to the actual qualities which affect the senses at the moment, there is a number of other particulars supplied by the mind itself. The residua, connected by numerous associations with each particular cluster of qualities, are aroused, and brought anew into consciousness, and thus enter as elements into the whole complex result.

The distant view of a mountain, a church, or a house, awakens, in addition to what we actually see and experience, a vast number of other particulars connected with it, by means of past associations, which at once enter into the whole perceptive process, and materially affect the result. Of such an extremely composite nature is the process of perception, when the mind has once become duly enriched and matured by experience. The mental activity, moreover, by which all this combination of elements is called up and presented to the consciousness as a complete cluster of qualities, is so rapid that it cannot be followed even by the closest observation, but only known by the final results. It is, in fact, only by a close analysis of the whole subject that we can detect the numerous portions of which so perfect and apparently undivided a whole is made up.

Finally, it should be observed that every complete perception involves in it a proposition or assertion, contains tacitly a subject and a predicate, and answers to the formula, —This is an orange, this is a house, &c. Thus, just as every simple perception implies a comparison with some other simple perception which has preceded it, and a tacit judgment that it belongs to some given class of sensational phenomena, so does every complex perception such as those just referred to involve a mental judgment, that this or that object belongs to some class of objects which we have before

perceived, with a similar cluster of qualites of attributes. The whole of the attributes are thus co-ordinated and combined, so as to form a material whole. If any one of them is wanting, the judgment is in abeyance. Only when they are all there, even down to the most minute particular which goes to form a distinctive feature of the class, can the perception be completed, and the mental verdict pronounced.

Our view of the perceptive faculty is now complete, and it will be by this time understood that it does not involve any peculiar mental operation essentially different from all others, but is simply the mind working according to its universal laws in this particular sphere of its intellectual development. Whatever is contained in thought, of however advanced a character, is contained germinally in perception. Perception involves in its unexpanded form all the elements of logical thinking ; and the power of comparison and separation, of seeing similarities and judging differences (in which, as we shall see, all logic consists), is here already at work, forming the mental law which underlies all our intellectual operations, alike in their lowest and their highest sphere of action.

PART III.

NATURE AND DEVELOPMENT OF IDEAS.

CHAPTER I.

RELATIONSHIP BETWEEN PERCEPTION AND IDEAS.

IN passing from the region of perceptions into that of ideas, we do not go into any new and distinct sphere of mental phenomena. There are no such sharply divided provinces in the human mind. In tracing the process by which our perceptions are formed and developed, we have been tracing, at the same time, the origin and genesis of our ideas ; for the only essential difference between a perception and an idea is, that in the former the actual object on which the mind is occupied is present to us, while in the latter it is absent.

This one point of difference we may easily show does not constitute any very wide distinction in the mental operations themselves. A person holds up an orange. According to the explanations made in our previous chapters, the perception of this orange includes a very complex process. It involves the perception of space, size, distance, colour ; the consciousness of something which has a certain smell, taste, and organic construction ; and the classification, moreover, of the whole as being similar to other oranges which we have before seen, and which contain the same aggregate of qualities. Now let the person who holds up the orange take it away. We no longer perceive it ; the mind is no longer occupied with a present reality ; but still the idea of it, which remains, is really composed of the very same elements as the perception which we had a few minutes before. The entire process which the mind has gone through from the first elementary perceptions up to the present moment, the

whole mass of residua which have been accumulated, which have melted into generalized or typal forms, and which are ready to start back into consciousness at the behest of some new mental association, all enter now into the process of ideation, and go to constitute the idea itself with which the mind thus becomes occupied.

In the common use of language the two terms—perception and idea*—are in fact often interchanged. We speak of the perception we have of a man's character, though there is no sensation at all implied ; and we speak in like manner of the idea we entertain of such or such an object, though it is at the very moment present to our view. The real material, so far as the mind is concerned, is the same, whether we speak of perceptions or ideas ; and it is on this account that the terms are so easily confounded in popular use.

At the same time, the distinction between perceptions and ideas at first so small, tends afterwards to widen more and more. Perception places the thing perceived, as a whole, before the mind, and keeps it there. When the perception is wanting, the mind, left to its own operations, dwells upon some of those prominent points which have more especially drawn its attention, while the object was actually in view, and which now consequently form the chief element in the idea, to the exclusion of the other and less prominent phenomena. The idea can thus in process of time depart further and further from the original perception, and at length become wholly confined to those particular attributes which formed the leading features in the phenomena as originally perceived. In perception, the elements are all held together in one general view—in ideation they tend to separate, and thus give rise to what we term abstract ideas. In the perception, therefore, the law of attraction is in the ascendancy ; in the

* In German they are both indicated by the same term, namely, *Vorstellung*.

idea the law of separation comes into play, and the abstracting process begins.

The fact of the close relationship subsisting between our perceptions and ideas, is of considerable importance in the further analysis of our mental operations. The question regarding the origin and genesis of our ideas has always been at once the most difficult and the most important in the whole range of mental philosophy. The two extreme views which have been held on this question are well known to all who have paid any attention, however small, to metaphysical subjects. On the one hand we have the theory of innate ideas, so firmly and unanswerably refuted by Locke. On the other hand, we have the materialistic or purely sensational theory, which regards our ideas simply as the relics of our sensations—impressions left upon the brain, and through that on the consciousness, by the external objects which have affected them.

Up to the present point in our analysis we have shown that there is no trace of such a thing as an innate idea. Just as every organized existence in nature has from its very germ a constitution of its own which corresponds to the world without—so also has man, even if we go down to the very first cell in his organic structure. The co-operation of the original human element with the powers of nature around us develop a bodily frame, a nervous system, and a cerebral mass, which is but the outward and palpable representation and medium of a corresponding mind-force; and it is the mutual action and reaction of this human constitution with the nature environing it which calls forth our mental activity, and gives birth to all the primordial mental phenomena. We have already traced the growth of the mind from this point onwards; and now that we come into the region of ideas, we have to do with the very same materials, only connected with a somewhat higher form of mental operation, and dissociated altogether from the immediate influence of sensation.

If, however, on the one hand, we find no trace of innate ideas, so, on the other hand, can we with equal certainty set aside the opposite doctrine,—that our ideas are but the relics of our former sensations. Sensations leave no relics behind them. They come, they are experienced, and they pass away never to be renewed. No sensation can ever be recalled. The memory of a pain or a pleasure is not the pain and the pleasure itself. Our sensations, as we showed, are comparatively few in kind. They consist only of the elementary functions of the five senses, and nothing more. It is the mental operations, which gradually ensue upon these sensations, which give them all their variety, and make them the starting-point for all our knowledge. Hence it is not the sensation which is prolonged, which leaves a permanent impression, and which enters into our subsequent ideas,—it is the perception connected with it, which alone has this power of persistency and reviviscence. The prolonged image, the relic, the persistent impression, which sensational philosophers speak so much of, is, in fact, not the product of mere sensation at all,—it is the product of perception—the product, that is, of the mind's free activity in connexion with the stimulus of nature from without.

The question of the origin of our ideas, therefore, so far as these have yet come before our attention, is narrowed to very small limits. They are neither born within us, nor are they impressed upon us from without; they are simply the product of the mind's free activity, operating in connexion with the world around.

It is true that all our ideas do not lie close to our perceptions as in the instances above cited. The mind once freed from the actual presence of the object, operates more and more independently, and enters into new combinations. By the power of imagination it may mould its materials into the most fantastic shapes; and, by the aid of abstraction, may give them a more and more generalized character.

CHAPTER II.

ACTION AND REACTION OF IDEAS.

THE mind can only entertain one idea at the same moment. It can pass, indeed, with inconceivable rapidity from one perception, motion, thought, or feeling to another, and thus range over a whole field of ideas before we have time consciously to note its movements, but it can never be occupied, strictly speaking, with more than one idea at a time.

For proof we can appeal to the testimony of experience. Thus, it is perfectly easy to think of a cube and a sphere alternately ; but we cannot have our consciousness occupied with both at the same instant. As soon as the one comes in, it excludes the other. It is easy to think of a lion and an elephant alternately ; nay, we can even think at one and the same moment of what is common to both ; but we cannot have the idea of a lion and the idea of an elephant, in so far as they differ, actually present to the consciousness at the same instant. Our ideas, in fact, always take the form of a series ; *i.e.*, they appear before us not contemporaneously, but in succession. Hence we speak of the flow of consciousness, to designate the successive stream of mental phenomena.

Suppose that two ideas are simultaneously presented to it, and mark what is the result. The two ideas presented are either like or unlike. If they resemble each other, the law of similarity (which applies equally to our ideas as to our perceptions) comes into play, and causes them to blend

together into one composite idea. In this form they can then occupy the consciousness at the same time; not, however, as two ideas, but as one.

But if the two ideas presented are not alike, and do not blend into one general form, then the stronger of the two represses the weaker, and drives it out of consciousness, while the former occupies the consciousness of the moment.

If we look to the idea that is repressed and driven from consciousness, we find that it is not destroyed, but only transformed into another mode of existence. Instead of being a present idea, it becomes a residuum, representing a certain latent disposition or tendency in the mind, proportioned in strength to the energy and power of the original idea. This kind of inward struggle of ideas is constantly going on within us, and the laws by which it is regulated are the laws which guide the whole flow of our consciousness. No idea, in brief, can possess the mind without having sufficient strength to overcome all resisting forces; and every idea, in overcoming these forces, loses a portion of its own strength, equivalent to the resistance which it has to overcome.

It is not time which weakens memory. When a person is thrown into a state of insensibility by accident or otherwise, he usually, on recovering, takes up the thread of ideas just where it was left off, without the least weakening of their impression being visible. It is the other dissimilar ideas, which occupy the mind in succession, that cause all our residua to lose their fresher hue. This result cannot in any case be possibly prevented, except by searching out cognate ideas, and thus renewing the impression of the one we wish to retain, so as to strengthen its tendency to recurrence.

Many important practical lessons may be deduced from this doctrine respecting the rising and sinking of our ideas. There are some things which we wish to forget—some residua which we are anxious to erase from the mind. So

long as the mind is surrounded with associated ideas, this is impossible. Everything, while this is the case, calls up the thought we would banish, and at each reappearance, the disposition to recur becomes stronger. On the other hand, if the mind is carried away into new scenes and new associations, each fresh impression weakens the dissimilar residua, and then the tendency to recurrence gradually fades away.

There are some things, on the other hand, which we are anxious to remember, but which we find it very difficult to retain. Every one has experienced the readiness with which the most familiar things fade from the memory when there is nothing to remind us of them. We travel in a new country, and become cognisant of all the places we pass through ; we return home, and in a year or two we hardly remember a third part of the names or characteristics of those very spots which seemed for a time as familiar to us as our own neighbourhood. We study a technical science—such as botany ; while engaged in it, the name of every plant seems familiar to us. But we lay the study on one side ; a year passes away, and the names can then only be recalled with the greatest difficulty, and, perhaps, often not at all.

Another important application of the law of residua above explained, is the provision which it makes for securing a constantly fresh recurrence of ideas, and thus giving tone and variety to the mind. Sometimes a very forcible idea strikes and haunts us. The thought of something disagreeable, which either has happened or is going to happen, takes firm hold of the consciousness, and it seems for a time as though nothing would drive it away. There is scarcely anything more powerful than such an experience, so long as it lasts ; and, were there no provision for freeing the mind from such spectres in its own thoughts, life itself would become a burden too heavy to bear.

The mental process by which these harassing ideas are removed is something of the following kind. We are

surrounded by circumstances. Men, things, human life, nature, all present themselves at every turn to our senses. For an idea to take possession of the mind, it must be strong enough to overcome all these resisting forces, and, for a time it does overcome them ; but, in overcoming them, it is constantly losing an equivalent portion of its own strength and vigour ; until at length, in process of time, it becomes unequal to the task of keeping the uppermost place, and sinks down beneath the surface of our consciousness, allowing the current of daily impression to ripple over it. Thus, however strong an impression may be—however tremendous its import, it cannot long challenge the mind's whole attention. A very strong association may bring it back again, but only to suffer for a second time, and that much more rapidly, the same fate as before.

When an idea really remains fixed in the consciousness, proof against all these counteracting influences, and has the power to draw everything else to itself, the result is insanity. Fixed ideas are the most frequent symptoms of incipient monomania, and are the sure indications that there is some disease preying upon the mind which prevents the normal working of the laws we have just explained.

CHAPTER III.

BLENDING OF IDEAS.

WE come now to the case in which the mind has to deal with ideas that are not dissimilar, and not incompatible with each other. Here the principle of mutual exclusion does not take place, but, instead of this, we find a blending together of the similar elements in each, and a consequent tendency to unite the multiplicity of our mental phenomena under general heads or classes. Thus, as the former chapter exhibited the working of the law of repulsion in connexion with our ideas, and the tendency of this law to produce infinite variety ; so in the present chapter, we must exhibit the law of attraction, and show how it, on the other hand, tends perpetually towards unity.

The law by which similar ideas blend together into one general form is, of course, merely an extension, or carrying out, of the law of similarity, which we showed to be so fruitful of important results in the case of our perceptions. Just as it is by the blending of similar perceptions that our generalized or typal perceptions of objects are gradually formed ; so it is by the blending of similar ideas, or rather of the elements of similarity existing in them, that our more general ideas, and many of our more spontaneous opinions, are constructed.

And first with regard to general ideas. These have been usually treated of in connexion with the logical faculty, and been considered as belonging wholly to the peculiar sphere

of abstraction and generalization. The mode, however, in which we now view the mental faculties—as being simply developments of a few fundamental intellectual instincts—shows us, that the processes of abstraction and generalization really exist in a natural and spontaneous form, at a very early period of our mental history, and that the very same law of combination, by which they are effected, runs through the whole range of our mental phenomena. Thus, in the development of our perceptions there is a latent process of classification always going on. The blending of similar elements insensibly generalizes our mode of viewing actual objects, even when present to the senses ; so that their mere presence awakens a mass of former experiences, which, combining with the experience of the moment, produces what we may term a generalized perception.

These generalized perceptions, form in the next place, the material of our ideas ; for no sooner does the actual object disappear, than what was a perception becomes an idea, and constitutes an object of thought apart from any outstanding reality. As soon as the mind becomes furnished with a sufficient number and variety of such ideas, the law of similarity begins anew its operation, and a blending of the elements, so far as they resemble and attract each other, again takes place. We may trace this blending together of similar ideas from a very early period, the combinations becoming larger, and the generality of them broader, in proportion as the mind grows up to maturity. The child, in its sports, generalizes in the most naïve fashion. The objects with which it is familiar, and which form the basis of its ideas, are the mother, the nurse, the teacher, other children, horses, carts, dogs, cats, and all the more attractive surroundings of infant life. The sports of the child are generally based upon the relations of these objects to itself or to others. All its notions of childhood, for example, are blended with the doll. The ideas of the mother, nurse, teacher, are

personified in play with other children. The idea of the horse is embodied in the stick on which he rides, or the log of wood which he fastens to his waggon. All these endless natural imitations of real life show that the experiences of the child, and the simple ideas it forms out of them, are beginning to combine into more general conceptions of men and things, and their mutual relations to each other.

As we grow older the range of our experience enlarges. All the elements of perception are formed into simple ideas, and these simple ideas tend more and more to merge into more complex and general ones. We think, perhaps, of a river. Of what does the idea expressed by the word river consist? Not of any single stream, but of an indefinite number of river-ideas, which have formed themselves out of the past experiences of ourselves and other people. The individual details, which differ in each case, sink away into the region of residua, or combine, perhaps, with other residua, with which they may have some affinity, while those elements which are similar, and which reappear in the case of all rivers, combine now with each other, and melt into one general idea.

In giving this description of the spontaneous formation of one general idea we are really giving the description of them all. All the myriads of notional words of which language consists are but the natural signs or symbols of such ideas. No one can suppose that the general terms we hourly use, such as house, tree, animal, stone, &c., have been constructed according to any conscious laws of predication. It is the spontaneous logic of the human mind which gives them birth. In this way the blending of what is common to an indefinite number of individuals at length results in a common idea, which idea is, with equal spontaneity, fixed by a word or a symbol. Whether we consider the formation of our more general or typal perceptions, or the formation of general ideas, in either case the mind operates according

to certain intellectual laws, but quite unconsciously. A principle of classification, an attraction of similar elements to each other, a complete blending of such elements into single ideas, all exist, and come into active operation, long before we have any power of comprehending or analysing the process. It is only when the mind reaches that sphere of development in which the logical power is unfolded that it can understand the laws by which it has been long silently and unconsciously operating.

The law of the blending of ideas may be traced, however, considerably beyond the mere formation of general notions. It also influences greatly our peculiar modes of thought, and the formation of our opinions. Abstract terms are formed primarily in the same way as general ones. Take the ideas expressed by the terms pity, love, anger, jealousy, &c., and consider what are the elements out of which they are formed. They all take their origin primarily from certain manifestations which we see in others or are conscious of in ourselves. These manifestations are very various, but, in the course of our experience, they blend together into a number of separate mental combinations, which are held together by the terms employed to express them. These combinations are enriched by others' experience as well as our own, by narratives, descriptions, analyses of character, &c., and become at length consolidated into general ideas by the attractive power which all similar elements have towards each other. It must not be supposed that abstract words, such as those above adduced, necessarily convey the same force to every mind. The force they acquire depends wholly on the peculiar combination of ideas as the symbol of which they stand, and will vary greatly in character, according to the mental experiences of each individual;—a fact, we may observe in passing, of great importance in estimating the relations which subsist between language and thought.

Not only is the force of words, however, determined greatly by the law of the blending of ideas, but a vast number of our opinions on social, moral, religious, and other questions are really formed by the tacit operation of the same principle. Thus the idea we entertain of death is really composed of the blending together of all the sombre accompaniments which usually attend it. If the mind be diverted from these, and dwell rather upon the brighter side of the picture, a totally different idea of it is gradually super-induced by the combination of new elements. The notions we attach to the term money is a highly complex one of this nature. All the uses of it blend together into the one concrete idea until it becomes the basis perhaps not only of a great dominating thought, but of a ruling passion as well.

Habits and practices are variously judged in different countries according to the combination of ideas which gather round them. The fundamental fact of right and wrong we suppose already to exist as a distinct element of the consciousness ; this being the case, however, the mode in which we judge of actions, in reference either to the one or the other, depends greatly upon the law of mind we are now considering. Actions pretty nearly indifferent in themselves, as to their moral complexion, will often gather around them artificially such an accumulation of residua of one character or another that they may be regarded, on the one hand as highly criminal, on the other hand as highly meritorious.

CHAPTER IV.

ASSOCIATION OF IDEAS : SIMILARITY—CONTIGUITY IN SPACE —CONTIGUITY IN TIME—LOGICAL AFFINITY—CAUSE AND EFFECT.

THE next point we have to consider is the principle which regulates the connexion and sequences of our ideas. There are multitudes of ideas which will never blend together into complex forms, but which, nevertheless, group themselves into many different combinations and series. Not only does this grouping of ideas exercise a vast influence upon the character of our mental development, but the greater part of our experimental knowledge actually depends upon the establishment of such mental connexions. What we mean by experience in the ordinary sense of the word, is the knowledge of the particular manner in which things are connected together in nature and human life. But, however closely things may be associated in nature, their association can be nothing, so far as our knowledge is concerned, until we have established a similar connexion between the corresponding ideas. The child puts his finger in the candle and is burned. The connexion between the flame and the injury had not yet established itself in his mind ; the one idea consequently did not call up the other, and lead to any practical result. So soon as the connexion between them is established, we say that he has gained the knowledge of it by experience, and he acts accordingly.

All associated ideas, however, are not connected with equal

closeness and regularity. Some are connected but slightly, others strongly, others invariably. Corresponding to these are the possibility, the probability, or the certainty, which we feel, of particular sequences taking place in the events around us. As, therefore, we have already gained a tolerably complete idea of the manner in which ideas blend into general or complex forms, we must now attempt to investigate the grounds of their external connexion, and the mode in which they form themselves into groups and series. We shall then have a nearly exhaustive knowledge of the relations of our ideas to each other; for as the law of similarity lies at the basis of those internal processes by which our ideas are moulded into masses, and generalizations established amongst them; so now from this new investigation we ought to gain a like insight into the formation of human experience, *i.e.*, into the principles by which we connect events with each other through the association of their ideas, and then form practical judgments respecting their sequences for the future.

Ideas in the mind, so far as they are incapable of blending together, are related to each other in the same manner as antagonistic forces. When one occupies the consciousness it can only be displaced by a second, on condition of the latter possessing for the moment a greater force; and then this latter, in expelling the former from the consciousness, loses a portion of its own force equivalent to what it suppresses or destroys. Now the association between any two ideas in the mind is represented by the amount of force which the one has expended in order to repress the other. Two ideas which have never acted upon each other, and which have never displaced each other in the consciousness, can have no inward connexion. They stand apart, and are bound by no link of association. If, however, they have been brought into mental collision, the one displacing the other, and the latter perchance gaining the upper hand and

repressing the former in its turn, then a close association is formed between them, which leads to their future connexion in consciousness.

The laws of association, objectively considered, are the following :—1. Similarity. 2. Contiguity in space. 3. Contiguity in time. 4. Logical affinity of the ideas. 5. The connexion of cause and effect.

1. With regard to similarity, we know, from what has been before explained, that the primary tendency of all similar ideas is to blend into some general forms. Where simple ideas, indeed, are in question, this is perhaps uniformly the case. In mature years we have to deal chiefly with complex and composite ideas ; and these ideas are often so related to each other, that whilst there is some element of similarity in them, the other elements of dissimilarity are so great, that the ideas themselves cannot be wholly brought to blend. Take the case of a family likeness between two brothers. If the likeness is very great, as with the twins in the “Comedy of Errors,” the ideas of the two objects or persons will blend together, and lead us to mistake one for the other. But in the great majority of cases the elements of dissimilarity preponderate, so that the two complex ideas remain distinct, the amount of similarity in the one remaining still a sufficient principle of association to recall the other.

Now, we can here trace very distinctly the difference in the working of laws,—that of the blending, and that of the association of our ideas. In the former case the principle of attraction predominated, and moulded the two ideas into one. In the latter case the principle of repulsion predominated, and led to a struggle in the one idea to replace the other. The greater, too, the similarity between them, short of actual predominance, the more vigorous will the struggle be.

Similarity, therefore, viewed as a law of association, can only mean partial similarity, and the way in which it

works is, that the two ideas strive to blend, but cannot ; they continue, therefore, alternately to displace each other, until a ground of association becomes in this way established between them. The same holds good, also, in contrast.

2. Things related to each other in space become associated together in idea. The place which is remarkable for any event, such as an accident or a murder, becomes so connected with that event, that we can hardly fail in future to think of them together. If, again, I think of Nelson's Monument in Trafalgar Square, I shall in all probability think of the National Gallery in connexion with it. Once more : if I think of the mother of a family, I shall naturally call up the memory of the children, and so forth. Now, what is the reason of this connexion ? What is there in our inward mental operations which leads to this result ? The ground of the connexion, I reply, lies again in the mutual action and reaction of the two ideas. The idea of the place in which the murder was committed has been displaced over and over again by the details of the act, the mind being drawn unconsciously from one to the other. My perception, and equally my idea, of Nelson's Monument has in like manner been often repressed by the next supervening idea of the National Gallery, or *vice versa* ; my thought of the mother has been displaced in consciousness by the thought of the children. Had the one of these sets of ideas never acted on the other, and never displaced it from consciousness, no connexion could have existed ; on the contrary, the more frequent and the more forcible these mutual actions and reactions have been, the closer is the future association established between them.

It will be seen from this, that the strength of the connexion of any two ideas does not depend primarily upon the constancy of any local connexion in nature. Let us suppose that I have passed once, and only once, over the Menai Bridge, and, in passing, met a friend in the centre. The

strength of the mental association formed from this one coincidence between the Bridge and that friend will be just as strong as the association formed between it and the Britannia Bridge in the neighbourhood. The constancy of the two connexions in fact, of course, is wholly different ; but, as the one idea has withdrawn my attention from the Bridge as often as the other, the strength of the mental association in both is alike. If I go over the Bridge frequently, then, of course, the association with the Britannia Bridge becomes the stronger, inasmuch as the accumulated force of the action and reaction of these ideas soon becomes far greater than in the other case. We may say, therefore, that things locally connected in fact, or in nature, tend to become more and more strongly connected in idea, and that this connexion is just in proportion to the frequency with which their mutual action and reaction as ideas has been brought into play.

3. But, thirdly, things connected in time become also associated in idea. One of the most familiar instances of this is the act of learning a piece of poetry from memory. The words are read over, and pronounced successively many times, and exactly in the same successive order they are associated in idea. The reason is obviously the same as in the cases before stated. Each word as read, or pronounced, is forcibly displaced by the next, and by no other ; a connexion in idea is consequently, as before, the immediate result. In the same way we may explain the ideal connexion which establishes itself between events. I hear a bell, and see soon after a number of people going to church. My attention is drawn from the bell by the people ; there is an action of the one set of ideas directly upon the other. As a consequence of this, when I hear the bell again, I think of the people passing, and the expectation of seeing them pass is awakened in my mind by the connexion of the two ideas. The oftener I have seen this particular sequence, the

stronger does the connexion of the ideas, and the stronger the expectation become. If the antecedent idea is sometimes succeeded by other consequents, the connexion of ideas is interfered with, because a struggle will ensue as to which link of association is the stronger, and the mind will be divided between them. Sequences in nature are less interfered with by circumstances, and are more uniform in their connexion, than most other sequences. On this ground it is that their connexion in idea tends to become stronger than in any other cases. The natural connexion of events in time is *per se* no ground whatever for the existence of any connexion in idea ; there are thousands of natural sequences of which we are wholly unconscious ; but as such connexions more repeatedly and more uniformly strike the attention, they become in the same proportion more closely associated, and the expectancy of the one following the other is proportionably stronger. The association, therefore, follows the same law as before ; *i.e.*, it is again determined by the amount of the action and reaction of the associated ideas.

4. Ideas are associated together by virtue of some logical connexion. Here, again, it is not the mere fact of a logical connexion existing between any two ideas which produces association. An illogical mind, for example, will generally fail to perceive the connexion, until it is forced upon it. And even a strictly logical mind will be unconscious of any connexion between ideas, however closely related, until its attention has been directed to them.

When we pass from one idea to another by a process of reasoning, then the one acts upon the other and displaces it. The more direct the action, moreover, and the more immediate the conclusion drawn, the closer will the association be. The same law of association, therefore, still holds, namely, that which equates the strength of association with the mutually reactive power of the two ideas.

5. The only law of association left is that of cause and

effect. If I see a flash of lightning, I expect to hear a clap of thunder soon after. I have associated the two ideas in my mind as cause and effect, and the one accordingly calls up and leads to the expectation of the other. There are many persons, however, who never thought of the lightning as a cause of the thunder, but yet who have formed a mental association between them quite as strong as my own. The ground of the connexion in both cases is really the same, viz., the action and reaction of the two ideas, and the force with which the latter has repressed and occupied the place of the former. Thus, in every case of association alike, we have this same mental fact underlying the process. Whether the connexion be that of similarity, of time, of place, of inference, or of causality, still it is only in proportion as such connexion brings the ideas into collision with each other, and causes them to struggle for the possession of the consciousness, that any link of association whatever can be formed between them.

The final question, then, is,—How do similarity, contiguity in time or place, logical and causative relationships, bring the connected ideas into collision, and then establish mental association between them? They do so, I reply, by forcing the mind's attention to concentrate itself upon them. I may see the same two objects together a thousand times, but if my mind is fully occupied, and my attention absorbed, no association is formed between them.

I may see the same sequences occur as frequently as may be imagined, but if I never observe them attentively they will establish no connexion between each other in idea. So with logical inferences, and causes and effects. Attention is equally necessary in each case, and for the very same reason, namely, that without attention the ideas enter into no action or reaction, the consciousness being meanwhile occupied with some other subject. The power of attention, then, is the primary ground of all association of ideas, for it

is in proportion to the fixedness of our attention upon them that ideas come into collision with each other, and enter into a process of mutual action and reaction. But, while this is the case, the objective circumstances of time, place, &c., above considered, may be regarded as secondary grounds of association, inasmuch as they are naturally calculated to draw our attention to the objects related, and bring the ideas into collision with one another. Lastly, with regard to the sequence of events, we do not necessarily regard their connexion as possible, probable, or certain, according as their connexion is rare, frequent, or invariable in nature; but, since the accumulated action and reaction of the related ideas is greater in proportion to the frequency with which the one replaces the other, we draw these general conclusions :—1. That frequency of connexion between any two events in nature tends to strengthen the mental association between them, and thus gives rise to the feeling that future occurrences in the same order are probable. 2. That uniformity of connexion, in the same way, tends to create an irresistible association between the ideas, and thus gives rise to the feeling of certainty in relation to their future sequence in the same order.

CHAPTER V.

LANGUAGE IN RELATION TO THE DEVELOPMENT OF OUR IDEAS.

THE origin of language has been long a *quæstio vexata*. Some have regarded it as a cunningly-devised instrument for the purpose of communicating our ideas from one to another. The fact of language being common to the rudest nations with the most cultivated has led others to ascribe to it a Divine origin.

These and all collateral theories have sprung out of a fundamental misapprehension of the real nature of the thing to be accounted for. Language has been regarded *ab extra*, as a fact,—an *ἔργον* which has been constructed at a particular time, and for a conscious purpose ; and then the question has come—By whom has this work been performed ? The real and correct view of the case, however, is, that language is not a thing preconcerted and completed, but a power which is always in the course of active development,—it is not an *ἔργον*, but an *ἐνέργεια*. There is no such thing as a complete and stationary language. All living languages are in the process of creation ; they are being daily moulded to express the thought of the age. Every individual, in fact, constructs language for himself ; for, though he inherits a certain fund of words from the past, yet he of necessity shapes it to his own mental wants, just as every age and every country shapes its own peculiar idiom, so as to form the reflex of its own ideas. A dead language is merely the record of a particular stage in the development of some given

national idiom; a living language is simply the stage upon which it at present exists.

Instead then of inquiring when, where, and by whom language was invented, we have to institute an inquiry into the mode in which the human faculties operate in every single individual, so as necessarily to give rise to it, and that too, not at any particular time, but always, and unceasingly.

To do this, we must refer our readers once more to the phenomena of the reflex actions. We have seen (and shall see still more clearly when we come to the psychology of the will) that there are certain actions we perform in consequence of particular excitements of the nervous system, which actions, though most distinctly adapted to subserve certain ends, yet are performed unconsciously. Other reflex actions there are, which are performed consciously, but still without any previous design or volition on our part. These are termed sensori-motor actions, and comprehend all the various forms of instinct, whether in man or in the lower animals. Some of these reflex actions, moreover, as we have seen, arise, not merely from external affections of the nerves, but from purely mental causes. Thus, the idea of anything disagreeable will often produce the same bodily effects as the actual sensation. If we see an injury occur to another, we shrink, and contract the muscles exactly as though it were occurring to ourselves. In watching the movements of a mountebank, we are insensibly drawn into a kind of muscular imitation of them ourselves.

It may be said that every mental state has some natural gesture answering to it. Shame produces blushing—anger, paleness—joy, laughter. Volitional states have similar effects. Notice the action of the tongue in boys learning to write, and the movement of the fingers in attempts at explaining anything difficult.

Now, the vocal organs are natural to us. We are all furnished with a larynx, a tongue, lips, teeth, and the power

of producing a great variety of sounds by means of the whole apparatus. Moreover, we see from the examples of the lower animals, as well as of idiots and children, that the voice is one of the most direct and natural media by which we indicate and externalize our inward states. The whole animal creation is replete with vocal expression. We can hardly conceive it possible that any aboriginal man could have been the subject of strong emotions without uttering some corresponding cry ; certainly, no one, however imperfect in the knowledge of intelligible signs, would fail to do so now.

Here, then, we have the primary condition of language, namely, a REFLEX ACTION, following necessarily upon some given mental state. As men become more cultivated, violent and incoherent gestures gradually decrease. They transfer their functions, in fact, to a more perfect medium of expression, *i.e.*, to the voice. In vocal utterance, therefore, we have merely the developed form of human gesture—the power of uttering sounds corresponding not merely to emotional states, but to all the varying shades both of thought and volition. That the power of giving utterance to our thoughts is fundamentally instinctive, and not artificial, may be seen from the ignorance in which we all live as to the mode in which these utterances are brought about. All we are conscious of in speaking is the mental state, and impulse to utter it. The entire process which lies between the mental state and the utterance (a process of the most complicated kind) is unconscious, instinctive, reflex. The will cannot affect the organs of utterance directly and immediately, any more than it can command the other functions of our instinctive life. It simply determines on the result, and nature herself provides the way for its accomplishment.

II. We can now proceed to show how sounds instinctively uttered under the various mental states of which we are

subject become associated with particular ideas. We must here set out from the fact last established, namely, that nature provides a gesture or a cry corresponding to all our varied mental experiences—that these utterances belong to the preconscious region of mind—and that they can, therefore, be perceived by the conscious mind as phenomena, with the production of which it has had nothing, volitionally speaking, to do. These natural utterances, too (as we may see in a variety of ways in the case of children and others), have a natural affinity to the particular states of mind which they express. Hence, as such states of mind frequently recur, the same kind of utterance will also recur, and thus a natural association will spring up between the two. Moreover, as men live together in society, and experience together all the varieties of emotion to which they are liable, the signs of these emotions tend to become assimilated; and then, from the natural force of imitation, they are repeated under similar circumstances and conditions by all who live together. When this is once established, not only will the given mental state, when experienced anew, tend to produce the given sound, but that sound, when heard from another, will recall the mental state with which we had ourselves associated it.

This analysis is fully sufficient to account for the genesis of the interjection, but perhaps no more. An exclamation of joy or pain will naturally follow the experience of the emotion as frequently as such experience occurs, and thus the two will become associated. The same exclamation, when heard from one another, will recall our own experience under similar circumstances,—and the mutual understanding and use of this same utterance thus gives us a complete psychological account of the origin and nature of the interjection, if of nothing further.

But this interjection stands only for a given state of feeling, with which of course the utterance has a natural

affinity ; this, however, is not the case with words that stand as the sign of things wholly objective to ourselves. To analyze the variation of the process which here takes place, we must look at the psychological difference between feeling and perception. In feeling we are occupied wholly with our own states ; that is, with the immediate fact of consciousness ; but in perception, the consciousness of our own affection is wholly lost in that of the object. In sight, for example, we think nothing of the rays of light, nothing of the affection of the retina, nothing of the nervous process which takes place in consequence of this affection ; the mind passes at once to the object, and loses in it all sense of its own affection as the perceiving medium. The perception of this object will then call forth an utterance as naturally as does the experiencing of a feeling. More especially, too, is this the case when the mind is young, and every object new and wonderful.

The point, however, now to be cleared up is ;—how this utterance should become the common representative of the thing. To explain how this occurs we must recollect that we have one perception of the thing, and another perception of the sound it calls forth ; and that it is these two homogeneous perceptions which have an affinity with each other, and form the real link of association between the two heterogeneous objects. On the one hand, we must notice, it is not the thing itself as a fact which impels the soul to utterance, but the particular mode in which we perceive it. We perceive a lion, and it represents itself to us by some one of its more striking attributes. It is regarded, we may suppose, as the ravener or the roarer. In the same way the horse would be represented as the swift-runner ; the sheep as the wool-bearer, and so forth. All the names of things, in fact, originally bear the stamp of some leading attribute, which forms the basis of the perception, through which it is regarded. On the other side, it is not so much the voice

itself as our particular perception of the sound of it, which is the direct factor in the mental process by which intelligent words are constructed. The sound, as we have seen, is impelled not by an act of volition, but by an act of instinct. It returns, then, from the lips, through the ear, back again to the mind, and excites there a perception, which perception forms a very close natural affinity with the primary perception of the thing, from which the whole mental process originated. These two perceptions, when repeated, become gradually associated—so firmly associated that the one instantly recalls the other—so firmly, in short, that the perception of the sound when uttered blends with the perception of the thing, and appears to the unreflective mind virtually the very same.

This complete blending of the perception of the thing, and the perception of the utterance which it calls forth, is intensified by repetition. The exigencies of society, and the necessity of communicating between man and man, gradually establish the same utterance as a symbol of the same thing to other minds as well as our own. Whatever natural divergence there may be in the utterances of different individuals is softened down by intercommunication and imitation, until a number of common and recognized symbols is formed in which we have the germs of an entire language. The double association again comes into play. The perception of the thing recalls the symbol, and the symbol when uttered recalls the thing. So that the construction of language all takes place according to the law of association already explained, *i.e.*, by establishing a firm connexion between dissimilar mental experiences by virtue of the mutual action and reaction they exercise upon each other.

We can now put together, therefore, all the steps which our analysis has revealed as forming the process by which language is produced. The mind receives first of all an impression from some external object, and forms a distinct

perception of it according to the laws we have already explained. This perception gives rise to a reflex action in the natural organs of expression, which reflex action produces a sound or cry; this sound, returning to the mind through the ear, becomes in its turn an object of perception; and then, lastly, the perception of the thing forms an association with the perception of the sound of so close a nature, that whenever the residuum of the latter is in any way brought into consciousness, the associated reflex action follows upon it, and words flow forth distinctly expressive of the ideas then present in the mind.

III. We can now, after these preliminary explanations, come at length to the question, which is most important of all in a psychological point of view, namely—What is the precise effect which the use of language exercises over the process of our mental development? Sensation, we need not say, has no connexion with language at all. Next, with regard to perceptions, they can be formed to any extent without words, although it may still be true that the use of words, when once attained, reacts upon our perceptive life in various ways, and influences many of the interpretations we put upon sensational phenomena. Thirdly, we can proceed without the use of words from the formation of perceptions to that of elementary ideas; for the external object may be removed, and the prominent features of it (those which most strongly engaged our attention) will still remain like a picture in the mind, which can be recalled into consciousness whenever the proper spring of association is touched, or the force of other repressive ideas is removed.

So far the normal process of mental development goes on regularly, simply by virtue of the influence exerted by the objects of nature around us upon our mental instincts and tendencies; but now we come to a point in the process where a new element is required. The residua of our perceptions return to us in the form of elementary ideas, where no

external object is any longer present to excite them or recall them to consciousness. By the laws we have already explained, these residua will enter into all kinds of combinations with each other, some blending by virtue of similarity, others being associated together in groups and series. But, as yet, there is nothing which we have detected capable of bringing order and system into these combinations. It is clearly of the utmost importance that our ideas should hold together in some systematic form ; that they should correspond in some way with the world of nature around, of which they are intended to be the expression ; that they should sum up, in some kind of rough classification, the phenomena with which we have to do in our daily life. If impressions, and fragments of impressions, are for ever to chase each other through the consciousness, with no more reference to the reality around us than the changing pictures of a dream, or the trains of thought in a waking reverie, the value of our ideas must be very small, and our mental adaptation to real life could hardly rise above the mere promptings of instinct.

The first step, then, towards bringing order and system into our mental life is taken the very moment we project any one of our mental images out of its proper subjectivity, and embody it in a sign external to ourselves. We seize upon some leading feature in our perceptive experience ; the mental effect of it as a phenomenon then expresses itself by a reflex act in the motor system, and calls forth a cry or a sound, which, returning to the mind, through the ear, associates itself with the original perception. At the recurrence of the same phenomenon, in any shape, the same cry is called forth, by virtue of the same law of reflex activity, and guided by the association already established. By daily intercourse this outward utterance becomes moulded into a common symbol, that is perfectly understood between man and man. Thus, by force of repetition and social use, the

association is strengthened, until the given sign stands firmly established, apart from ourselves, as the natural symbol of the given attribute. This attribute, once expressed and symbolized by a term, forms the basis of a classification, under which every aspect in which it occurs in nature is included; and it thus establishes, so far at least, a fixed relation between our own ideas and the phenomena around us.

Let us take an example to illustrate this analysis. Let us imagine the aboriginal man to have seen a wild animal, such as a horse, running swiftly past him. He makes some utterance expressive of the rush and swiftness of the motion. This same utterance would naturally be repeated on a second occurrence of the same phenomenon; and, after that, it would soon be employed to express the running of other animals as well; at length the very same sign would be used by others also to indicate the general phenomenon of swift movement; and thus the whole idea expressed by the word "run" would have a fixed symbol in speech, answering to the general fact in nature. That this analysis is correct is indicated by the very form of most primitive roots, particularly in the older languages, which roots very generally exhibit in sound some rough approximation to the fundamental physical fact of which they are the expression.

But we must enter a little more closely still into the mental function involved in the use of words, as now explained. In the explanation already given of the nature of perception we showed, that the definite perception of any object whatever involves a tacit classification, and, consequently, an internal judgment. The judgment, however, is of such a nature that the two terms of it (the subject and the predicate) are blended together, instead of being kept distinct, as in a duly expanded proposition. We will take the perception of a rose as an example. Here the phenomena which are brought by the senses to our sensorium are interpreted instinctively by the mind. There is a certain form

and colour, and scent presented ; the mind, in bending its attention to them, recalls into consciousness former residua of a similar nature ; and these residua, blending with present appearances, give rise to the present interpretation of the object. This interpretation, if it were expressed in words, would be as follows :—The object before me is a new example of similar objects already experienced, to which the name “rose” has been applied. The mind, however, in realizing this perceptive state, does not separate the elements of it in the analytic manner above indicated ; it does not sum up the different attributes, nor, indeed, observe any one of them distinctly and by itself ; it simply experiences a general effect, and unconsciously interprets it to mean a certain thing.

When we proceed, however, from perceptions to ideas, the separation between the subject (rose) and its different predicates at once commences. Instead of the mind being occupied with the general effect, we recall, one by one, the particular attributes which have most struck our attention. This recurrence of the different attributes, if expressed in words, would be, The rose is red, the rose is sweet-smelling, the rose is tender, &c. These judgments, of course, we do not complete or realize to ourselves at first. The words, perhaps, do not yet exist, and, therefore, we have no means of putting the mental process we are passing through, in its germinal and elementary form, into a fully developed shape. So soon as ever a word is uttered, however, that word involves in it a tacit judgment—a judgment, moreover, of a more advanced analytic character than the one which we saw to be involved in perception.

Let us take an example to illustrate this. The primitive man sees a bird fly over his head ; the phenomenon gives rise to an utterance. Such utterance is at first, of course, rather an expression of wonder than anything else—a kind of interjectional sound. By the force of repetition, however, it soon becomes articulate, and stands as a symbol of the

phenomenon with which it has now been associated. Having arrived at this point of mental development, whenever he sees or thinks of the flight of birds, and utters the word "fly" (or whatever its equivalent might be), he performs, by the very utterance of it, an act of classification ; for, in that very utterance, he identifies this new phenomenon with former ones of the same kind. If we attempt to expand the judgment involved in the use of "the word," we shall find that the subject of it is always the actual phenomenon presented, or thought of, and that the predicate is the whole mass of our prior reminiscences. Thus the word "fly" indicates that this case of flight belongs to the same class of phenomena as those former ones which we have already experienced ; and the word thus becomes the mediating point between the present and the past. It acts as a fixed centre, around which the whole multiplicity of our experiences, in one particular respect, gather themselves, and sums up, in one single breath, the result of a thousand previous mental experiences, and of a thousand possible ones yet to come.

We find here, accordingly, the same mental laws recurring as in the previous stages of our mental life. What is a word ? We reply, a distinction, a judgment, a separation—an inward mental conclusion that some given phenomena coincides with some former ones, and is different from some others. This conclusion is fixed and recorded by the simple use of the term. By the law of attraction, a given number of similar perceptions are united indissolubly under one symbol, and formed into a generalised idea ; and, by the law of repulsion, others are equally excluded. The only difference is, that the judgment so made is embodied in an objective form, and can thus serve henceforth as a category for the classification and summary of natural phenomena.

We may now sum up, then, in a few particulars, the direct effects of language upon our mental development :—

1. First of all, it brings order and arrangement into our ideas, and thus serves as a practical classification of the phenomena of nature around us. This it does by embodying all the more typal ideas in an objective symbol, and giving fixity to them as the central points of all cognate phenomena. We perceive the world by means of the senses, but we comprehend it in and through the forms of language. Without this practical classification, fixed by signs exterior to our selves, our ideas would resemble a mere phantasmagoria of impressions like a reverie or a dream.

2. Language serves the very important purpose of condensing and abbreviating our ideas. A single word sums up the result of a vast series of individual impressions in a generalized form. It thus acts in relation to our thoughts the part which algebraical symbols act in the higher calculations. As it would be impossible to keep all the parts of a complicated calculation in the mind without such symbols, so we should be confused and overwhelmed with the infinite multiplicity of our individual ideas, unless we could sum them up in symbols, and use those symbols as representatives of certain mental equivalents.

3. Another office which words perform is that of stamping a certain fixed character upon our general notions individually considered. The idea we form of a thing is taken, as we saw, from some one or more of its prominent characteristics or attributes, and this attribute is expressed by the word which conveys it. Thus, the wolf is originally, in the Teutonic dialect, the ravening animal; and the ox, in the Greek dialect, is the lowing animal. All the branches of these primitive roots contain tacitly the same fundamental perception as the basis of the whole; and the peculiar attributes under which all the objects of nature are perceived taken together make up what is called the inner form of the language. It can easily be understood from this, that the language we are first brought up to employ as the organ of

our thought puts its stamp upon everything we come in contact with. So true is the expression of William Humboldt "Es liegt in jeder Sprache eine eigenthümliche Weltansicht."

4. As a corollary from what we have now remarked, we can infer that it is through the agency of language that we are brought into the general current of human thought.

Language contains a summary of the thoughts and judgments of our forefathers upon men, and things, and truth in general. In learning our native language, we are furnished with a tolerably complete classification of the phenomena of nature, of society, and of human thought and feeling. The idioms, the terms of expression, the proverbial sayings which are current around us, the inner form of the language, and the very grammatical inflexions of the words, all contain a certain meaning, which is the interpretation that the national mind has put upon the facts presented to it. Language, moreover, when once worked up into a national literature, is the complete repository of the civilization of the people to which it belongs ; and every individual, in imbibing this language, and being brought into contact with this literature, is placed upon the vantage-ground, which the combined activity of his ancestors and those of his whole race have prepared for him. To this we may add, that, in so far as every example of civilization is dependent on the historical development of mankind at large, we are brought through the medium of that civilization into the general current of human thought.

5. Another mental effect which we derive from language, is, the power of combining our ideas and thoughts *ad infinitum*.

As the symbolism of algebra and arithmetic gives us the power of combining numbers and calculating the most distant results, so the symbolism of language enables us to combine our ideas and work out our reasonings to a degree otherwise wholly unattainable.

CHAPTER VI.

REPRODUCTION OF IDEAS: MEMORY.

WE have been occupied hitherto with mental phenomena, which are almost wholly involuntary in their character and mode of recurrence. Thus, in the case of perception, the mind is constrained to a certain course of activity by the presence of the external object. When we see a person whom we well know suddenly pass by, it does not depend upon our own will what kind of a perception is called up. The experiences we have already had of the person in question are actually laid up as residua in the mind, and the sight of him awakens these in virtue of a mental law which operates by the most rigid necessity. The case holds good of all other perceptions, such as those of a castle, a church, a mountain, a picture, &c. By the spontaneous blending of our residua, these generalized perceptions have been gradually formed into certain shapes ; and they recur, when awakened by the allied sensations.

The same spontaneity is observable likewise in the rising and sinking of our ideas. The laws by which these processes take place are as well defined as those of perception, and as certain, if only left to themselves, in their operation. The only difference is that they are more apt to be interfered with by volition ; for the external object being no longer present, they come necessarily somewhat more under the indirect control of the will.

In the present chapter we have to advance another step in

the phenomena of mental reproduction, and discuss that form of it, in which the mind controls the individual acts of recurrence by the power it can exercise over the operation of its own laws ; for, in addition to the involuntary reproduction of ideas, as seen in a former chapter, we shall show that there is such a thing as a conscious and voluntary reproduction of them by means of that power of mind which we ordinarily term the memory. It is to this precise point, more especially, that we have now to direct our attention.

There are few mental processes which have been more wrongly or inadequately comprehended and explained than memory. Perhaps the most incompetent of all theories was that which the French Sensational School has propounded ; namely, that memory is but a prolonged sensation. To prolong or renew a sensation is wholly impossible. There is no material similarity at all between the toothache and the idea of it. Every sensation terminates with the outward cause that gives origin to it ; and the recollection we may preserve of it afterwards consists of totally different elements.

The explanation of the case is not much more satisfactory, if the memory be represented as the storehouse of the mind, in which actual impressions are laid up to be recalled at any future time by the power of association.

Let us suppose that two persons--one an artist, with a peculiar taste for natural scenery, the other a farmer, looking with an eye to trade and profit--meet on some elevated ground, and view a fine landscape. The actual impressions made upon both through the senses are the same ; but if we investigate the memory of the scene which each retains a year afterwards, we shall find that there is a most material difference. First of all, the great mass of details which filled up the picture of the moment has disappeared altogether, and each person has retained just those particular points, which coincided most with his own mental tendencies. It is clear,

therefore, that a large amount of mental activity is combined with the phenomena of reproduction over and above the mere recurrence of actual impressions made through the eye, while multitudes of the impressions which actually were made have been altogether lost.

Nay, even if we go a step further, and take, as we must do, the full explanation already given as to the formation of our perceptions, and the spontaneous rising and sinking of our ideas, as the basis of our theory of memory; still all this is not sufficient to give a complete account of everything which we include under that term. For we not only require, in any theory of memory, to see the possibility of the recurrence of our ideas, but to know, why we demand of every sane man that he shall have a tolerably complete control of the fact of their reproduction; why we make a man responsible for his memory, and why we treat him as deserving of blame if he forgets what he ought to remember. It is evident, at first sight, that all this presupposes a certain voluntary power over our ideas, and a certain co-operation of the will in their reproduction.

Now this fact—viz., the self-conscious power which we have to place ourselves again in certain given mental states already experienced—offers a clue to the comprehension of the real nature of memory. We can only exercise a voluntary power over those mental states, in the production of which we have ourselves consciously co-operated. A sensation, an emotion, a perception of some present object, we cannot recall. We had nothing to do consciously with their original production, and we can never experience them a second time, except by the concurrence of the same set of circumstances which contributed to bring them forth. Not so, however, with those mental states which are the result of the mind's free activity. Let some striking scene be presented to us, and the mind at once sets to work to master and comprehend it. It seizes upon this feature and upon

that ; lets the more uninteresting points sink away from observation, and brings the more interesting ones forward into especial prominence ; it compares one part with another, separates here, unites there, and constructs for itself a mental image of the whole, which, though occasioned by the objective reality before us, is still mainly the work of the mind's own free and conscious activity. It is this image, then, which we can recall, and only this. And it is only as far as we know that the mind has bent its voluntary attention to the matter, and grasped an idea, or set of ideas, for itself, that memory can be either demanded or expected of any one. The question, then, we have now to discuss is this,—What is the nature of memory regarded in the light of a voluntary reproduction of certain prior states of mind ? Of what elements does it consist ? And what are the mental processes we pass through in order to gain this control over the recurrence of our ideas ?

Many writers have attempted to reduce all memory to the laws of association, making its phenomena simply the result of those laws in their ordinary operation. This theory, however, labours under one most serious defect. It does not elevate the fact of recollection in any degree above the category of involuntary mental processes. The laws by which our ideas act and react are not subject, except very indirectly, to the control of the will. Like the laws of nature, we can only use them by obeying them. The associations we form, accordingly, are formed involuntarily, and the return of any given idea, or combination of ideas, into consciousness, so far as it depends on mere association, does not at all satisfy those conditions of voluntary control, which form the most essential element in memory properly so called.

Another mental phenomenon which has often been selected as the chief basis of the memory is ATTENTION. This is no doubt a much nearer approach to the true explanation. Attention implies a voluntary effort directed towards some

particular topics of mental consideration. Without such effort we could not certainly remember, still less retain, any hold over the free reproduction of our ideas. But the mere statement of the fact, that memory depends upon attention, does not go very far towards explaining the details of the process ; it only leaves us with the very obvious truth impressed, that some kind of mental effort must be applied to any subject of our thoughts or perceptions, in order to be able to control their future reproduction in consciousness.

Attention alone, however, would not be sufficient to explain all the peculiarities of the case. There are many cases in which mere attention proves insufficient. We often bend our mental energies to a subject and make a great effort to retain it ; but still all our efforts prove unavailing. The memory proves treacherous and incompetent, the subject becomes a confused impression, and in proportion to the confusedness of the impression it escapes from the mind, and baffles all our endeavours to recall it with any degree of vividness or minuteness of outline. Many other cases there are in which one half of the power of attention drawn to an object will produce a much more perfect result in regard to reproduction ; so that there is evidently some mental element at work in addition to mere attention, on which the voluntary power of reproduction greatly depends.

We have already shown that, in attending to any object, the mind makes a peculiar representation of it for itself. By giving great prominence to some features, and letting others sink away unthought of, it creates a special idea of it, which bears the obvious marks of its own free activity. The conception that every man forms of anything to which his attention is directed will depend greatly upon his own mental tastes and tendencies. Here, accordingly, we might argue, that what the mind has once constructed for itself it can reproduce at pleasure ; and that, as the image, which the mind has formed of the object of contemplation, is the pro-

duction of its own free power, so it can, in the exercise of that same power, call it up, or dismiss it from the consciousness at will.

This account of the matter, again, is partly true, but also partly false. It is true that every distinctive idea that we form of a thing is the product of our own reflection, and depends upon a mental process over which we can exercise a considerable voluntary control ; but it does not follow that we can always reproduce it at will. There are many ideas formed in the way indicated, which we seem to lose sight of altogether, and cannot by any effort bring back into memory. No doubt they exist there in the form of residua, but we have entirely lost the clue to them, and cannot return to the point in our past experience which holds the key to their reviviscence.

Over and above the fact of a mental idea or representation being the product of our own intellectual activity, its relation to the power of memory, we find, will also greatly depend upon the order and arrangement of the other thoughts and ideas, in the midst of which it stands, and to which it is related. No one with any amount of attention could retain a perfect mental representation of the stars and groups of stars in the sky, were there no further mental activity exercised upon them than their mere perception. But let some principle of order and arrangement be brought in ; let the groups be classified, and let the relative positions be marked ; let the whole firmament be thus mapped out upon some intelligible principle, and there is a clue given by which the whole can be retained in the memory, and the separate portions at any time be recalled.

And what is true here is equally true, according to its measure, in every other case. Nothing that we see, hear, or think of, exists alone. Everything stands in the midst of a system of ideas, of which it forms a part, and with which it has numberless connexions ; and it is by surrounding it with

a network of such ideas, all duly ordered and arranged, that we are enabled to go back to the exact point in the system where we shall be able to recover it, and bring it back to our consciousness.

We will suppose the object we wish to recall to be a phenomenon of nature, some one amongst the thousand chemical facts which science presents. Here the chance of retaining one out of such a multitude, and recalling it at pleasure, appears very small. But the fact in question stands in a system of cognate phenomena. We know the elements which are at work ; we know their properties ; we know the effect of their relative combinations ; and the given phenomenon merely comes before us as one particular example amongst a series of causes and effects, of which we know the beginning, the middle, and the end. This being the case, we can pass mentally along the series from any point until we come to the fact itself, and thus lift it, as it were, out of the whole network of idea by which it was surrounded.

Again : we wish to remember the characteristics of a flower. We locate it in due order, in the centre of some well-defined botanical system, and the memory recurs to it at once without difficulty.

It matters little of what description the links of connexion may be in the system of ideas ; *i.e.*, whether the connexion be logical or practical, whether natural or artificial. In cases where there are very few natural links of connexion, it is necessary to create artificial ones, as in the case of numbers and dates. The whole principle of every possible system of mnemonics is, to create a connected series of artificial links, so that when any one part of the series is given, the mind can pass by regular steps to any other, and thus drop down, as it were, upon any particular number or date that may be required. The process of learning the multiplication-table is really a system of artificial memory, in which the mind

establishes, generally by the mere sound, a number of points, which it is enabled to call into consciousness at any moment. Here the logical connexion between the numbers would, of course, give a more natural and certain mode of bringing any of the required products to mind, but it would not be so rapid in its action, and consequently is not so well fitted for daily use.

Lastly, in regard to the practical affairs of human life, the very same principle in regard to memory holds good as in the other cases above mentioned. The duties which devolve upon every one of us form, as it were, a connected system of "agenda," which must be ever present more or less to the mind of every thoughtful and practical individual. We know from daily experience that, if due attention be directed to the whole system of duties devolving upon us, and due order and connexion be established among them, it is impossible that anything of magnitude or importance under ordinary circumstances could be forgotten.

Hence memory is drawn of necessity into the sphere of human duty. To overlook an engagement, or to forget an obligation, shows that there must be culpable neglect somewhere. It shows either that the mind has voluntarily dismissed such obligations from its presence, or that it has failed to entertain such a sense of the value of human duty as to induce it to form a system of practical activity, in which every duty shall find its place, and in doing so shall present itself in its due order to the memory.

An important point in regard to education is here brought to view, namely, that the cultivation of memory does not imply merely the exercise of a single faculty, as many suppose, but that it implies, primarily, the establishment of order and connexion in our ideas, and hence involves a process which is more or less allied to the intellectual and logical processes themselves. To whatever extent the memory is successfully cultivated, to that extent must there have been

some amount of system inculcated. If the system of ideas which is thus woven be of a natural kind, nothing can be more important than the power of memory thus developed. If the system of ideas be artificial, still it is better than none, and facilitates some arrangement of our knowledge, though that arrangement may not be the best possible one. The habit of memory, in short, viewed generally, is equivalent to the habit of order and method in our ideas ; and, so far as this is the case, forms a most important element in the process of mental education.

It can hardly fail to have suggested itself already, that there must be a very close affinity between the exercise of memory and the use of language. Language, as we showed, implies an instinctive classification of ideas. We sum up a large series of phenomena, which resemble each other in some distinctive point, in a single word, and that word can henceforth be used as the symbol of the whole. In the exercise of memory, we introduce new connexions and a new order into our ideas, based upon the classification which language has already prepared. Were our ideas not objectivized and defined by the use of terms, recollection would be impossible. There might be the recurrence of former impressions, the return of numerous residua into consciousness, in accordance with the spontaneous laws of action and reaction ; but there could be no voluntary control over our ideas, and no self-originated return to any given point in our past consciousness. By means of language, we can hold our ideas, as it were, before us as things existing apart from ourselves ; we can combine them or separate them, and place them, in short, in any given relationships whatever to each other. In this way we can mould them into a complete system, and so create the conditions on which voluntary memory depends. What we wish to remember we always state clearly in words. When this is not the case, our ideas flow into each other ; and, having no fixed and definite relation, cannot

present any defined lines of thought by which we can pass from any given point in the system to all the rest.

To sum up, then, our whole theory of memory :—We see, 1st, that there is no such a thing as any separate and peculiar faculty, so called ; 2ndly, that the possibility of memory is based upon the universal fact of the persistency of our mental impressions, of whatever character ; 3rdly, that memory, regarded as a voluntary reproduction of past phenomena, takes its start from the spontaneous classification of ideas which is involved in language, without which we could exercise no direct control over them whatever ; 4thly, that, starting from the platform of language, and the instrumentality it puts into our hands, our power of memory as a volitional act depends upon the order and system which we consciously give to our ideas, and which alone can enable us to hold them at any time ready at our behest ; and, lastly, that it is only on the ground of the power thus acquired that we become responsible for the use of memory, and can be held blamable when, in any important affair of life, it fails to perform its office aright.

CHAPTER VII.

UNDERSTANDING AND IMAGINATION.

WE have now gone through the main questions which arise in connexion with the genesis of our ideas, and their relations to each other. We have seen how they blend, how they combine in groups, in what way they are assisted and developed by the aid of language, and how they are voluntarily reproduced. The last thing we have to elucidate under this general head is the proper meaning of the terms, Understanding and Imagination.

And, first, we must show that neither of these terms designates any separate and peculiar faculty. By understanding is generally implied the power of comparing between two or more things. By imagination is generally understood the faculty of creating and retaining the images of things in the mind, of bringing them vividly into consciousness, and combining them into new forms.

It will not be difficult now for the reader who has followed the preceding expositions to see, that whatever is distinctive of understanding or imagination in the sense just indicated is involved in the whole of those prior series of mental phenomena which our analysis has already presented. With regard to understanding, the mind begins to distinguish, to separate, to recognize, to judge, from the very first moment of our perceptive life; all the combinations which enter into our individual perception, all

the blending of similar impressions, and the holding asunder of unlike ones, involve a discrimination of differences, although, of course, in a more elementary and spontaneous form. In like manner, whatever is distinctive of imagination —viz., the reproduction, retention, and recombination of our mental impressions—is all involved in the entire course of our mental development, so that without it, indeed, no development of mind or consciousness could possibly take place. We must look, then, for some other explanation of these two terms more in accordance with the general character of our present psychology.

From the commencement of man's reflective life—from the moment when the mind first begins to compare its impressions and seeks to interpret them, the consciousness flows ever onwards, occupied, without cessation, either with its perceptions or its ideas. The laws by which the formation of our perceptions and the flow of our ideas are regulated have been already investigated. In taking a general review of the whole, we find that there are two great mental tendencies corresponding with the two fundamental laws of all mental activity; there is, 1st, the tendency to combine and connect; and, 2ndly, the tendency to divide and hold asunder.

When we get fairly within the region of ideas, these two tendencies govern the whole predominant activity of the intellectual powers. To understand a thing means, to be able to assign it its proper connexion in some system of ideas—to combine it in one mental representation with those other things with which it is associated in nature or art. This process of combination begins very early in our mental history. For example, the child sees its father in numberless different positions and circumstances,—*i.e.*, standing, sitting, dressed, undressed, still, and in motion, &c.,—and very soon learns to combine all these various phenomena under one representation and one personality.

He does the same with inanimate objects. He sees the moon sometimes bright, sometimes gloomy, sometimes full, sometimes half full, &c., and unites the whole, after a time, into the idea of one single object. Proceeding onwards from these simple cases the mind begins to connect together similar objects also, such as different kinds of clouds, trees, animals, soldiers, &c., under general representations. In other words, it sees their connexion in nature, stamps them with a name, and holds them firmly as so many classified elements of knowledge. Thus language itself is the work of the understanding, operating in connexion with the instinctive impulses, and affording a natural classification of our ideas, corresponding with the words we employ to designate them.

As the mind grows more mature, and its experiences enlarge, it enters into wider and more general combinations. A dog would, at first, only be connected with another dog, and be placed mentally, in a combination of experiences, extending only to the different kinds of dogs which might be brought under observation. Soon, however, the properties of the dog would be compared with those of other animals, and a wider connexion would be established, as expressed by the word quadruped; the properties of the quadruped again would be compared in the same way with those of the animal kingdom generally; these again with other kingdoms of nature, until you come up to the highest possible generalization, that in which the connexions are the widest and most embracing. The great work of the intellectual faculties, in brief, is to find out natural connexions between phenomena, to establish classifications, to go on ever widening the range of vision, and thus including objects the most distant from each other, and, at first, the most unlike, under some general representation. This whole tendency then we designate by the general word understanding, inasmuch as all we mean by understanding an

object is, to know its connexions in nature, and to see it in combination with everything else of a cognate character.

We turn now to the opposite tendency, that of separation and distinction. The great mass of our perceptions and ideas are representative of complex objects. However necessary it may be to begin our mental life with individual things, yet, as we grow up, we come to deal more and more with combinations, and with objects *en masse*. To this the ordinary operation of the understanding naturally leads. In dealing with these complex objects we begin soon to discover that there is a second and opposite mental tendency which is directed, not to the combination of our ideas, but to their distinction and individualization. When an object is presented to us we may occupy ourselves upon it in two ways. Either we may regard it generally in connexion with the class or genus to which it belongs, and attempt thus to comprehend its natural relations, or we may regard it in detail, and, separating all the individual features, may pass them in review one after the other, and connect with them other features of other objects with which they stand in analogy. Thus, in contemplating a new flower which has never been seen before, one man most naturally looks to those peculiarities which determine its botanical character; *i.e.*, he attempts to connect it with other flowers by the aid of certain defined properties which it possesses. Another man neglects the genuine character and looks merely at the detail, forming thus a perfect representation to himself of its size, shape, colour, leaf, stem, root, &c., and thus becomes able to reproduce all these distinctive characteristics as the result of his perception. The former draws, as it were, the grand outline of an object; the latter fills it up with all the minute details. This last process, then, is what we term imagination, which, accordingly, simply denotes a mental tendency to individualize the peculiarities of every object brought before us, and to go on dividing, *ad infinitum*, so

long as any minute feature is left to be considered and isolated.

The practical application of the distinction we have now drawn may be found in the phenomena of human life all around us. Who are the persons that we should naturally classify under the head of men of understanding? Such a classification, were it carefully made, would include men distinguished for their scientific knowledge; men learned and apt in professional life; men of sagacity as statesmen in any branch of political service; men, in brief, who have an insight into the laws of nature, of man, of society, of commerce, of any practical branch of human industry or human investigation whatever. And what are the habits of mind which lead to this kind of human sagacity, and render men eminent in their various spheres as men of understanding? Clearly the habit of comparing and generalizing; of seeing the connexions of things and reasoning from one observation to another. This is the real secret of what is ordinarily termed common sense.

Turning to the other side of the question, we ask, Who are the persons that we should classify as men of imagination? Such a classification would include poets, artists, litterateurs—men devoted in any way to the culture of what is beautiful—men of sensibility, who have an eye for all that is most captivating in scenery, in architecture, in antiquity, in everything which human art can represent and pourtray. And what is the mental tendency discoverable in all these different types of character? It is the tendency to separate and distinguish—to allow the mind to run over all the details, whether of a picture or a landscape, or a scene in human life and character—it is the tendency, in a word, to clothe the bare skeleton of human thought with all the embellishments of external dress and minute expression.

We find, accordingly, that the great twofold law of our mental activity not only puts into our hands a principle

which carries a light into the secret recesses of our mental operations, and aids us in the analysis of many of the most complicated processes ; but that it is applicable also to the great phenomena of human life and character, and shows us the real foundation of those two great springs of action in the world—understanding and imagination.

PART IV.

ON THE LOGICAL PROCESSES OF THE
HUMAN MIND.

CHAPTER I.

TRANSITION FROM THE REGION OF IDEAS INTO THAT OF LOGICAL PROCESSES.

IN commencing the consideration of what are usually termed the logical processes, we reach that point in our inquiry, in which the voluntary co-operation of the individual comes in as a considerable modifying element. Every sane mind must go through all the different forms of sensation, of perception, and of ideation, as above explained, and that much in the same way ; its inward ideas, when formed, must also blend by the law of similarity, and become associated by that of mutual action and reaction ; it must acquire the use of language, and the power of memory ; and it must show, in a greater or less degree, the twofold capacity of understanding and imagination. These are the universal characteristics of every sane man, however low he may stand in the scale of mental education. They designate the spontaneous working of our mental nature, in its contact with the external world, and give us an insight into the manner in which our primary faculties unconsciously grow up to some appreciable degree of perfection.

But there are many minds which, having developed these universal characteristics, here stop short in their growth, and hardly attain any degree of logical power whatever beyond that instinctive logic, which is involved in all the lower

forms of our intellectual activity. The mental phenomena, accordingly, which we have now to consider, belong to a class which are but dimly traceable in many minds, and which, even in those which do manifest them distinctly, appear always with a very variable degree of intensity. The analysis of them, however, fortunately for us, becomes exactly so much the easier in proportion as each step is accompanied by a distinct volitional effort.

Keeping, then, in view this one element of explicitness, in which the logical processes differ from those mental operations which have been already considered, we can now go on to show that there is no fundamental separation between the two—no new laws of mind involved, but only a more developed application of those which we have already seen in operation. The two great fundamental laws of mind, as we have often explained, are the power of selection or assimilation on the one hand, and the power of separation or distinction on the other. If we go back even to the purely physical processes, we see them all presenting these two modes of operation. All the vital functions, for example, consist either in selecting what is conducive to life and health, and incorporating it into the system, or in rejecting and separating whatever is unhealthy and destructive. Our perceptive life, in like manner, commences with the distinction of one mental experience from another, followed up by the recognition of those which resemble some others previously felt by us ; and, throughout the entire development of the perceptive we merely go on either combining or separating, until we learn to recognize in an instant all the phenomena and the relations of the external world by the few primary symbols which the separate senses present.

Our ideas, again, grow and consolidate in exactly the same way. The mind, by the law of similarity, selects the homogeneous elements in them all, and welds them together so closely that they cannot be distinguished, whereas it

separates and holds apart those which are not naturally related. The former blend into fixed notions and beliefs, the latter combine into clusters and trains of thought, in which every link is held distinctly, as a separate element, in the mind.

In entering, therefore, upon the consideration of the logical processes generally, we may say, in the outset, that no primary elements are involved in them different from those two, with which we are already so well acquainted. All logical thinking consists in selection and separation, in the affirmation or negation of like or unlike relationship. Whether we look into the inward nature and constitution of terms, of judgments, or of arguments, the cognition of similarities or dissimilarities, of equalities or inequalities, is the material out of which they are all alike constructed. The entire region of logic, in fact, has to do simply with the forms and processes of this great twofold law of our mental activity, and properly so; for, as it proposes to investigate generally the "laws of thought," it must, in order to perform its office thoroughly, show how all the subordinate processes of abstraction, of predication, and of reasoning directly spring out of the one primary law as the ultimate foundation. This is the doctrine which we shall have to develop and establish more at large in the next few chapters.

Before we proceed to do so, however, it may be useful to make a few remarks respecting the province of logic generally, and the relation which our psychological inquiries bear to the formal science known by this name. The science of logic owes its origin, and, we might almost say, its maturity, to the wonderful mind of Aristotle. Up to his time the idea of a science of mind was hardly realized, so that it was not possible that the laws of thought should be investigated, even by the genius of an Aristotle, from a psychological point of view.

Aristotle started in his investigations simply from

the phenomena of language, and denominated the science, in accordance with this, *ἡ λογική τέχνη* the logical or verbal art. The grammatical form of the sentence as being the natural mode in which we express our thoughts, was taken by him as the fundamental type of thought itself. Every thought, he reasoned, expresses itself in a proposition, and every proposition consists of a subject and a predicate, connected together by a copula. In the relation of these three elements to one another, therefore, we have involved all the fundamental laws by which human thought, as developed in language, is guided and regulated.

Considering, then, that the whole material of human knowledge lies virtually in propositions, as being the natural expression of our judgments, he found that all our notions, ideas, perceptions, &c., might be divided into two great classes: first, those which are fitted to form the subjects; and, secondly, those which are fitted to form the predicates of propositions. Amongst the first of these classes he reckoned all individual existences; things, that is, respecting which we may affirm many and different attributes, but which cannot be affirmed of anything whatever except themselves. All these he designated by the term *ὄντα*, existences.

Going from the subject to the predicate, Aristotle found that, while the former cannot be affirmed of anything but itself, it may yet have a great variety of predicates affirmed respecting it; *e.g.*, this table can only be affirmed of itself; but many predicates, such as round, hard, white, large, wooden, &c., may be affirmed respecting it.

Accordingly, he attempted to classify all that can be predicated of a thing under certain distinct heads, and thus produced the nine categories, which have held so prominent a place in the history of logical science ever since.

But here a difficulty arose. The individual things respecting which so many attributes may be predicated present themselves, not only as individual things, but also as classes or

species, and, in this light, may take the place of a predicate as well as a subject in any sentence. Thus, in the proposition "John is a man," the term man denotes a class, not a mere attribute, such as those we have before pointed out, as naturally forming the predicate of a proposition. To explain this, Aristotle distinguished between first existence and second existence, *πρώτη οὐσία* and *δευτέρη οὐσία*, the former denoting an individual, the latter a species.

Starting from these fundamental principles (all evolved, let it be observed, from the grammatical structure of the sentence) Aristotle and his followers went on to build up the whole science of logical forms, *i.e.*, to define the extension and comprehension of terms, the laws of the conversion and opposition of propositions, and the various rules of the syllogism, as being an expansion of the fundamental canon so well known as the "dictum de omni et nullo." In all this Aristotle kept strictly to the principle of investigation from which he started. The science itself he called *Logic*, or *Discourse*; the branches of the science he designated by the doctrine of terms, propositions, and syllogisms. By this whole phraseology he pointed out the fact, that he was merely attempting to deduce and explain the laws of thought, as embodied in the forms of language, and making no effort whatever to lift up the veil of thought and look into the machinery which was working beneath it.

Had the followers of Aristotle always maintained this same fundamental point of view, the science of logic would have always remained as clearly defined in its nature and limits as it was at first. But, instead of doing so, they allowed psychological questions gradually to intrude into it, and thus materially altered its complexion. Instead of the doctrine of terms, they began to speak of simple apprehension; instead of propositions, they spoke of judgment; and instead of syllogisms, of reasoning. Thus a tacit assumption grew up that the three parts of formal logic implied three correspond-

ing mental faculties, of which terms, propositions, and syllogisms were the natural results. Logic thus became, not a mere analysis of thought, as involved in the phenomena of language, but a science professedly based upon an independent observation of the mental processes,—a mere branch of psychology.

This confusion of two wholly distinct regions of inquiry has been in every way unfortunate. While, on the one hand it has brought discredit upon the procedure of logic itself, on the other hand, it has fostered wholly incompetent and untenable psychological views.

Analysis of the forms of thought, as involved in the structure and force of language, is one thing ; a psychological analysis of the laws and genesis of thought is wholly another. Leaving, then, the science of logic standing as an independent analysis based upon a given external material, our present object will be to trace the inward processes themselves, and give rise to that region of mental activity which bears the ordinary appellation of logical thinking. It may still be convenient to separate our inquiry into the three heads of simple apprehension, judgment, and reasoning ; but the result will be to convince us, that these are merely advanced, or rather advancing, stages of that same general law of thought which is cradled in those fundamental processes of selection and separation with which we have already become so well acquainted.

CHAPTER II.

OF SIMPLE APPREHENSION.

THE expression, simple apprehension, is here used merely to designate the mental process which is involved in the primary steps of logical thinking. The entire procedure of formal logic is connected with the use of terms ; these, to speak technically, form its whole proximate matter. The proper understanding of terms—the comparison of terms—the drawing of inferences between any two terms by means of a middle term—express the whole business of logic scientifically considered.

At present we have to do, however, not with logic as a formal science, but with the mental processes out of which it springs. How, then, are we to designate in psychology the mental fact which corresponds with the word term in logic ? Various expressions have been employed for this purpose. Sometimes the word notion has been used, and sometimes abstract idea. Sir W. Hamilton revived the word concept, which has now come into pretty general use amongst logical writers in this country, and is perhaps the best expression we can employ for this purpose.

By simple apprehension, then, as employed at the head of this chapter, we mean the power which the mind possesses of forming concepts. We know that the human mind in its more natural state possesses a number of abstract and

generalized notions,—all those, to wit, which we express ordinarily by means of common and abstract nouns. These nouns or names we designate in the language of logic as terms. The mental state corresponding to any of these terms we call a concept ; and the mental capacity which we possess to form concepts we designate simple apprehension. So far with regard to the words now to be employed, and the precise signification we attach to them.

What we have next to inquire into, therefore, is, the doctrine of the concept. We have to show what concepts are, how they are formed, and what are the mental processes which underlie them.

With a view to this discussion, it will be well to glance, first of all, at the ordinary explanation which has been given of the nature and genesis of the concept. It is as follows : —That, in perceiving a number of different objects, the mind abstracts or strips off, in thought, those peculiar properties in which they differ from one another, and contemplates simply some one property in which they all agree. Having done this, we unite them together (as the word concept etymologically expresses) under one head, and term it, as the case may be, a general or an abstract idea. Thus, for example, we see three straight lines, cutting each other, and forming a figure with three openings, or angles. We see the same thing repeated with lines of various sizes, and with various degrees of inclination to each other ; but, in every case, we have three lines, and in every case three angles. Putting aside, therefore, the differences, we form a general notion or concept of the thing in its fundamental relations and call it a triangle.

Now the question comes, Is this a true description of the process which the mind really goes through in forming the concept of a triangle ? I think it may be shown quite clearly that it is not. Take a number of triangles of different forms and sizes, and set the abstracting process at work

upon them. The only character which each one really contains for itself, besides three lines and angles, is a certain specific relation of these lines and angles to each other. Let this specific relation drop, or, in other words, abstract it, and we have merely three indeterminate lines and three indeterminate angles left, which are quite different from the concept triangle. Thus the mere comparison of triangle with triangle, and the abstraction of their differences, would never bring us to form the general idea. Very different, however, is the result if we take another kind of figure—say a quadrilateral, and compare a number of these with a number of triangles. Here we are at once struck with a common difference. In one series of figures we have three lines involved and three angles ; in the other series, we have four lines and four angles. Allow that no two of all these figures are alike, still we can at once place them in two distinct series, by abstracting everything except the common difference ; and, so soon as ever we have done this, we have clearly before us both the concept triangle, and the concept quadrilateral figure, as representing the common difference between the two series of phenomena. But will this same explanation hold good in the case of natural objects ? Take the general idea of a rose. Is not this formed by a comparison of different roses together ; namely, by seizing upon the common resemblance in them all, when their differences are mentally abstracted ? We believe not. No two roses are, of course, really identical. Wherever we look, we see only varieties and differences. How could we abstract from each of the different roses presented exactly the proper amount of difference, and no more ? And how could we seize upon the indefinite *Nescio quid*, in which the essence of the rose consists ? These essential elements would certainly be altogether hidden and entirely lost amidst the endless varieties presented, if we only compared one rose with another. But now let another series of flowers—say

a multitude of lilies, be presented, and what strikes us? Clearly a common difference between the two series, which leads necessarily to our classifying them into two distinct groups, in which groups the respective individuals are all duly comprehended.

This analysis, which appears tolerably clear from the cases already presented, is raised, however, to a much greater degree of certainty, when we take special cases of abstraction and generalization, such as those involved, for example, in the concepts colour, taste, smell. How can the general idea of colour arise in the mind? Shall we say that there is a series of phenomena presented, such as white, black, blue, green, yellow; and that we abstract all their differences, leaving their common resemblances aside? Let me ask, then, What would remain if you abstract the difference between black and white, or blue and yellow? The difference here covers the whole extent of the phenomena, and, when it is abstracted the result would be—nothing. But now compare a series of primary phenomena like colours, with another series of primary phenomena, such as tastes. Although each individual case is different, yet we have no difficulty in classifying them under two distinct heads, as belonging to two different modes of sensation. The consciousness of this common difference forms at once the concept colour, and the concept taste; and there can be no doubt but that such a consciousness would never have arisen in the mind at all, but for the act of separation which we are constrained to make between two separate series.

There is still a theory of the concept which it is necessary to advert to, based upon the principle we have often expounded in the preceding chapter, that, namely, of the blending of similar elements into generalized forms. It is laid down by several of the modern German psychologists, that our concepts (*Begriffe*) are formed just in the same way as our typal perceptions and generalized ideas. A vast number of

objects are constantly presenting themselves to our senses ; the perception of these objects leaves residua in the mind (according to the principles previously explained) ; these residua insensibly blend together by the law of similarity ; and when a result is obtained in which all reference to time and place is lost, and all memory of the actual objects of perception from which the generalization takes place, we term this result a concept. Thus, the concept, rose, it would be said, is obtained by the insensible blending of all our experiences of this flower, so soon as the varieties are all lost sight of, and the common similarity becomes absolutely predominant.

This differs from the ordinary logical explanation by making the process of conception purely spontaneous, without involving the conscious selection of any common feature as the ground of classification. Such an explanation would be, no doubt, sufficient to account for what we have already termed generalized ideas ; but there is a very essential distinction between a mere idea and a concept, in the logical sense of that word. Were the process by which the concept is formed simply that above stated, the whole result, it is evident, would be a purely subjective one. The laws of mind, operating in connexion with the external objects by which we are surrounded, would give rise to such general conceptions in a purely spontaneous way, but, when formed, they would have no practical reference to the real objective existences, or furnish us with any available classification of things as they are in nature. Neither would it be possible, on this hypothesis, for the concept to retain consciously any individuals or subordinate species within its extension. For the process of blending goes on within the mind quite unconsciously, so that the elements out of which any idea is formed, and which that idea really embraces within it, must all be wholly lost in the purely subjective nature of the operations by which it is

gradually and insensibly constructed. Nay, these elements might be drawn from a hundred different sources, many of which have no real connexion with the actual class of objects which the concept ostensibly includes.

From these considerations we are enabled to give a clear statement of the actual difference between what we have termed a generalized idea, on the one hand, and a logical concept on the other. To do this, we must go back again for a moment to the primary sphere of our perceptions, and briefly recapitulate the steps we have gone through in the progress of our mental development. Perception has to do in every case with the real concrete object itself. It places this object before us in its totality, so that we can recognize it as being something, or, rather as being like something, which we have been conscious of before. It does not carry us, however, from the object viewed as a whole into the details—*i.e.*, it does not analyze or divide it into the various properties of which it is composed. To do this is the province of the next step in our mental development—that which has to do with the formation of ideas.

In forming ideas, we already begin to separate the attributes from the phenomenon as a whole, and are thus enabled to seize upon some prominent feature which strikes us most readily as the leading or characteristic symbol of the thing itself. Thus, the wolf may be regarded as the ravening animal, the lion as the roaring animal, the squirrel as the leaping animal, &c. This special view of the object is then fixed by a term, and thus becomes an idea which will stand for any one of the same species—a kind of concentrated or abbreviated image of the thing itself. Now, in forming a concept, the properties both of the perception and the idea are in a sense united. On the one hand, the consciousness of all the concrete attributes is retained as fully as in the case of perception. The thing from which it is formed, with all its details, is clearly before

the mind's eye ; but, instead of viewing that object now as a whole, the separation effected by the process of ideation is also retained, and we regard it as a whole which comprehends under it such and such determinate parts. Thus, when we stand before the fire, we have a perception of this element as a whole ; we see it, feel it, hear it. All its different properties, though taken in by different senses, yet make one general impression, which is what we mean by fire as experienced directly by the senses. The idea of fire is different. We have not now all its properties pressing up into consciousness ; we feel no warmth, see no light, hear no sound ; but we have a generalized image of the thing in our mind, which takes the characteristic of some particular feature that has most struck our attention, and is embodied in the term by which the idea is fixed and symbolized. But, thirdly, the concept fire is different again, though it partly includes both. We have not the special sensations, it is true ; but we have a generalized notion of fire, as comprehending certain distinct properties ; and, the further our natural philosophy can reach, the more full and determinate does the concept become.

The case is the same with a class idea. The perception of a whale would give us merely the view of a large water animal, in some respects like, in others unlike, a fish. The idea of a whale would be that of an enormous fish, like an animal—its name being formed so as probably to represent its immensity, and its minor characteristics being altogether lost sight of. The concept of a whale is that of a mammal, having such and such precise characteristics common to all mammalia, and such and such superadded peculiarities of its own.

In cases where the concept becomes more generic, we retain the consciousness of the different species which it includes. Thus, the concept, dog, involves a consciousness of the different tribes. In every instance we have

the generality of the idea united with the speciality of the perception; and it is this precise combination which gives it its value as a summary or abbreviation of human knowledge, clear to the consciousness, and yet applicable to the reality of things.

The reasons we have now given for establishing the insufficiency of the two theories above referred to naturally involve the explanation we have to offer of the real notion of the concept, and the mental operations which underlie it; we may now, therefore, sum up our analysis of it with all the greater brevity.

The mind, in coming daily into contact with the objects of nature (the properties of which it has already learned to mark) soon finds that, though the variety in the midst of which it is placed is infinitely great, yet the difference between one object and another is not absolute and entire. Thus, two things may differ in quantity, and yet resemble each other in quality, and *vice versa*. Accordingly, we begin gradually to form our experiences into series. Thus, objects which produce the sensation of colour, of taste, of odour, of sound, &c., form so many series or scales of phenomena, which may possess many other characteristic marks, but yet which all agree in possessing these particular features, and are separated in this respect from other series. The same is true of natural classes of objects—as different kinds of metals, different species of plants, different families in the animal kingdom, &c. If our experience were confined to a single series, the common identity, no doubt, would not strike us. But, as each series differs from every other, the distinction between them soon comes to stand out with remarkable prominence. Our experiences become thus moulded into groups, each group presenting a kind of unity of its own, but yet containing individuals under it relatively different from each other.

The notion we form of the unity of any whole group, based as it is upon the common difference which separates it from any other group, is what we call a generalization; the notion we retain of the separate identity of each individual in any group by virtue of some specific difference not affecting the generic unity, is what we mean by the particular. A concept may thus be described as the unity of differences —the consciousness we have, that a given series of different individuals may nevertheless form a totality in relation to other series around it.* This process of forming relative totalities, though it no doubt begins by grouping a few individuals under one common designation, goes on gradually extending, until species are grouped under genera, genera of a lower grade under genera of a higher grade, and so on, until we reach the few grand fundamental distinctions which form the basis of our natural judgments respecting the essential character of the phenomena presented.

If we follow the natural distinctions of things steadily up the scale of generality, we find at last that there are three main points of difference, which remain standing when all the minor ones have disappeared. These are (1) the quality of objects, (2) their quantity, and (3) their relations. These three characteristics it seems impossible to merge into each other. They represent points of view which the mind must always keep distinct in its judgments respecting the natural world. Such fundamental grounds of distinction are usually termed categories. To form a complete table of categories (both primary and derivative) is the part of logic rather than of psychology, and need not be attempted here.

* It is convenient to term a concept formed by combining a number of similar properties as existing in different objects into one notion, an abstraction, and that which is formed by rejecting differences, and leaving a common agreement, a generalization. We shall see that the one answers to a subject term, the other to a predicate term.

At present, therefore, we may remain by the three chief points of distinction above stated—more especially as they will have to be taken into account in the analysis we shall give in the next chapter of the nature of judgment, and the essential varieties of the proposition.

The analysis we have now given of the psychological origin of our concepts clearly shows, that they possess an objective value, which we ought by no means to overlook. Our perceptions we individually feel to have an objective value, inasmuch as they arise in connexion with the actual presence of the object perceived ; but they give us only a general and superficial view of it, and do not bring us to any recognition of its real nature or essential character. Our ideas have a far slenderer objective value than our perceptions. They are based, no doubt, upon the elements of real experience ; but the materials often come from so many different sources that the result may be, and frequently is, very far removed from the correct representation of any objective reality. Many of our ideas indeed are pure creatures of fancy, and are wholly subjective in their composition. Others are of course much closer representations of the truth of things ; but, at best, they take much of their hue from the general complexion of our own minds. The concept, on the other hand, is formed more strictly upon the basis of the reality of things. The series of phenomena which we combine together in one general notion is not a mere group of mental representations, it is a scale of real objects or attributes as they exist in nature. Every species which we express by means of a concept is a natural fact as well as a mental generalization, so that the concept leads us far into the essential nature of things. It tells us how they stand in relation to the rest of creation, to what genus and species they belong, what properties they possess peculiar to other objects, and what they have peculiar to themselves. It is on this account that the reasoning, which is based upon

them, is not a mere play of words, but has a direct relation to truth itself.

In the same way we may vindicate for the categories based upon the principles above referred to, both an objective and subjective value. While, on the one hand, they give us the general notions by which we proceed in the classification of our experiences, they are valid at the same time as establishing real and fixed distinctions in the nature of things. Quantity, quality, and relation, may be very abstract terms, but they are terms which enter necessarily into the essential idea of every external object.

Finally, if we inquire under what laws of mind the whole operation of building up our concepts proceeds, we find, as before, simply the two great fundamental forms of mental activity at work, *i.e.*, the power of combining or blending, and the power of separation. When we form our experiences into series we do so by seizing the common resemblance of a number of phenomena, and combining them into a relative unity. When we place one series by the side of another then the power of separation and distinction comes in, and we hold them apart as different species, and fix them by their respective terms.

The combined operation of these laws is, therefore, necessarily involved in the formation of our concepts ; and, simple as they appear, yet they enable us, by the mere force of combining and distinguishing, to enter very far, and that with the torch of consciousness in our hands, into the very nature and essence of things themselves. We need hardly add, that, just in proportion to the power of philosophical observation and analysis which we apply in any case, in the same proportion will the significancy of the concept become more pregnant and complete.

CHAPTER III.

OF JUDGMENT.

IN treating of the nature of judgment (the second operation amongst what are termed the logical processes), we must start with the supposition that the mind is already furnished with concepts to an indefinite extent. In other words, the phenomena of nature have been looked at as forming groups or series, and the separating faculty has already noted and recorded the common differences which distinguish one group from another. This being presupposed, almost every new phenomenon which now presents itself gives rise to a judgment. For what we mean by judgment is, the act of mind by which we assign any individual object to its proper class or any given species to its proper genus.

(1) The mental procedure by which this is effected is not difficult to trace. A flower, for example, is presented to a botanist which he has never seen before. It is possible that the moment he sees it he may be able to assign the class and order to which it belongs. But if this be doubtful he looks carefully at the different characteristics, compares them first with one class, then with another, until he forms a judgment as to the one to which it ought to be assigned.

Now this is a precisely similar mental procedure to that which takes place in the ordinary exercise of judgment in every-day life. Most objects we see are so well known, or their characteristics so clearly defined, that by an instantaneous apprehension, as it were, we assign each to some well-known

group. But this is not always the case. Many instances arise in which we are doubtful as to the classification. We see a particular example, but we cannot instantly determine the general type to which it belongs. We have to compare the example, therefore, mentally, with many different types, with which we are already acquainted ; until our judgment is at last made up, and the particular is connected with the general idea under which, in our opinion, it ought to be classified.

However rapidly our judgments may be formed, it is evident, from the above analysis, that they represent a very complex process. The judgment, "This metal is yellow," would, in ordinary cases, be pronounced instantaneously, the very moment the object is presented to my view ; but in this one instant there are really concentrated a great many mental acts which I must more or less consciously perform. First of all, I must have perceived the object itself, and I must have examined its characteristics sufficiently to decide that it is a metal, which I can only do by comparing it with the different groups of minerals already established in my mind. Then before I can say "This metal is yellow," I must have observed the precise yellow of the metal, and brought it under the general experience designated by the term "yellow ;" which general designation, again, I must have recognized as one in the scale of colour, and distinguished from those other colours, such as red, blue, green, &c., which the whole scale contains.

(2) From the explanation just given, we can now point out with greater clearness the difference between a concept and an act of judgment. In forming a concept I compare a single thing with other single things to see if they have any common features of resemblance ; and this leads to the formation of a series or class, which, when compared with the other classes, becomes a fixed notion in the mind. This process of forming our concepts is, moreover, to a large extent, involuntary and

instinctive. Our minds are so formed that we cannot help distinguishing and classifying ; nor could we establish any mental grasp of the objects of nature around us unless we thus distributed them into distinct series.

In framing a judgment, on the other hand, we do not compare single things with single things, but we compare single things with classes already formed, in order to determine to which known class they severally belong. This further act of comparison is by no means so indispensable to the creation of human knowledge as the former one. The mind can very well rest in the contemplation of the different groups which it has formed from individual phenomena, without caring to go beyond them. It may contemplate an object without wishing to classify it any further, the exercise of any higher judgment upon it being altogether optional. Hence the act of judgment is relatively a freer act than that of conception, and indicates a more advanced stage in the normal procedure of the logical faculty.

(3) Having taken this general view of the nature of judgment, we come next to consider its elements. Every judgment, whether expressed in words or not, really consists of three parts. First, there is the notion of some individual or class of individuals, which we are attempting to comprehend or explain by referring it to some more general class ; then, secondly, there is the notion of the more general class to which we refer it ; and then, lastly, there is the act of mind by which we see that the particular is contained logically in the universal ; or, as it is more simply expressed, by which we affirm the one of the other. Thus, in the judgment, "Gold is a metal," we have the notion of gold as the more particular, the notion of "metal" as the more general, while the verb "is" represents the mental act by which one is affirmed to be logically contained in the other. The first notion is termed the subject, the second the predicate, while the connecting link is termed the copula.

(4) The next question which meets us relates to the different kinds of judgment. We have already explained the difference between an abstraction and a generalization, properly so called. An abstract notion denotes some property or attribute which we observe as belonging to a number of different objects ; a general notion denotes some class of real existences, which we form in our minds by neglecting the individual differences, and seizing upon the common resemblances. This distinction forms the basis of a classification of all our judgments under two heads,—those in which we affirm what a thing has, and those in which we affirm what it is ; or, to use other phraseology, those which show what an object connotes, and those which show what it denotes.

Thus the proposition, "This flower is white," shows what the flower has ; it expresses a property or attribute which it possesses, and which we now observe as actually belonging to it. But the proposition, "This rose is a flower," does not say what the rose has, but what it is. It refers it to a higher class, in which its essential nature is more expressly stated.

But there is another ground of distinction between judgments besides the nature of the predicate ; that; I mean, which depends on the extent of the subject. The ground of my conviction is quite different according as I affirm anything of one single individual, or of the entire class to which that individual belongs. I may say, "This man is rational," from my own personal knowledge and experience of him ; but if I say, "All men are rational," I clearly go beyond the limits of any possible experience of my own, and make an affirmation which must be grounded, as far as my conviction goes, altogether in some different mental law from that on which I base my knowledge of individual fact.

Taking, then, these two grounds of distinction together, *i.e.*, assuming two different kinds of subjects, and two

different kinds of predicates, we have four classes of judgments in all. These are—

- (a) When we bring a particular under an abstract notion.
- (b) When we bring a particular under a general notion.
- (c) When we bring a universal under an abstract notion.
- (d) When we bring a universal under a general notion.

As examples, we may give the following four propositions :—

- (a) This paper is brown.
- (b) This stone is marble.
- (c) All men are mortal.
- (d) All metals are minerals.

Now, if we analyze the mental processes which underlie these four propositions, we find that they differ materially in each case. In the first, viz., "this paper is brown," we affirm that the property of this paper, viewed in its relations to the scale of colours, corresponds with that particular shade of colour to which we have given the name brown. It is simply a case in which we recognize, as belonging to the paper, a particular attribute, that we have already observed in other cases, and expressed by the adjective now employed. In the second proposition, "This stone is marble," we are not passing any judgment respecting any particular property, but are bringing into comparison all the essential properties which we already know to belong to the substance called marble with those which we now perceive to appertain to the particular object before us. As soon as we see that the essential properties of the latter resemble or coincide with those of the former, we immediately pass the judgment in question.

In the third proposition, "All men are mortal," we go wholly beyond our individual experience, and affirm that the entire class "man" exhibits the peculiar phenomena which we denote by the word mortal; while, in the fourth and last proposition, we affirm that the entire class, "metals,"

resembles, in its essential features, the more extensive class, minerals.

If we now turn the abstract terms brown and mortal into generalized ones, and call them brown things, and mortal things, then we shall easily see—that the whole business and end of the judging faculty, in all these cases alike, is simply to note and affirm certain **DEFINITE RESEMBLANCES**.

Proposition *a* may be stated, “This paper is like all brown things.”

Proposition *b* may be stated, “This stone is like all marble.”

Proposition *c* may be stated, “All men are like all mortal things.”

And proposition *d* may be stated, “All metals are like all minerals.”

Thus, although the exact kind and degree of likeness differs according as we assert anything to agree with anything else in one single property, on the one hand, or in a whole group of properties, on the other—that is, according as we take an abstract or a general term for the predicate—it is still true that the affirmation of resemblance is the common element at the basis of them all.

From this analysis it is easily seen that judgment, in the ordinary logical sense of the word, deals with the category of quality, and falls entirely within its province. In every case we have to do either with qualities alone, viewed in the abstract, or with qualities as designating classes of things of a greater or less degree of generality. It must not be supposed, however, that all judgment is necessarily of a qualitative character. No doubt it is so originally, and must ever continue so, as long as we are exercising it upon objects which cannot be exactly compared in respect to magnitude or quantity. It may happen, however, that the resemblance we note between objects when regarded in connexion with their relative size may arrive at a point of distinctness, in

which perfect equality, or, at least, some definite proportion, can be affirmed as existing between them. So soon as this is the case, the qualitative judgment passes over into the quantitative one; and the connecting symbol between the subject and predicate, instead of taking the form A is like B, takes the form A = B, or A \geq B.

Intermediate between the judgment of quality and the judgment of quantity stands the judgment of relation. Here we do not assert likeness, nor do we assert either equality or definite proportion. We simply affirm that one thing stands in a given relation to another, as the sines of different degrees do, for example, to the corresponding angles.

In the purely quantitative judgment the relation between a logical whole and its parts is altogether lost; and the relation of an extended whole to its parts takes its place. It is this which forms the ground of distinction between ordinary reasoning, as analyzed in the forms of logic, and mathematical reasoning, in any of its different forms. And it is just because we can compare the extended or integral whole with the constituent parts so much more certainly than we can compare the logical whole with the parts of comprehension, or species contained in it, that we can carry on mathematical trains of reasoning with so much greater certitude in its results than we can any other.

To this question, however, we shall return ere long; and, therefore, having pointed out that the nature of our judgments is materially modified by the category (whether that of quality, quantity, or relation) within which it falls, we shall now go on to expound the theory of reasoning, in which these categorical distinctions come to play a still more important part.

We may, however, before we do this, again point out the fact already stated,—that the same two great fundamental laws of mind which we have traced in all previous processes are still the moving and directing forces in all the different

forms of judgment. It is by separating and distinguishing, that all judgment is carried on. Whether we affirm similarity or dissimilarity, equality or inequality, proportion or disproportion, identity or difference, respecting any two conceivable concepts, still there are just these two fundamental facts involved, and no others. So far as we have yet gone, therefore, the logical processes are simply applications of the great primary law, of all mental activity, to higher and more developed forms of the intellect. The very same powers of assimilation and separation, which the vital force manifests in its lower, or physical action,—the very same principles, by which the perceptive faculty is developed, namely, those of combining similar residua, and holding dissimilar ones apart,—the very same laws, by which our ideas blend, as it were, into masses, or combine into groups and series,—these all reappear on the stage abstraction, and become, at length, the psychological groundwork of formal logic.

CHAPTER IV.

ON RATIOCINATION.

WE come now to the third of the logical processes, usually denominated reasoning. We have seen already how our concepts are formed, viz., by noting the differences between groups of phenomena, and holding each group in the mind as a separate unity, having individuals or sub-species under it. We have shown, next, that judgment means the mental act by which we assign any individual or sub-species to its proper group. This we do by observing that the essential attributes of the object we wish to classify are like the essential attributes of some class already known. In both cases, the powers of separating and combining, of perceiving differences and similarities, are the only fundamental forms of mental activity really involved. These powers are ordinarily exercised, whenever we form concepts and judgments, under the guidance of direct observation. We see the differences between the groups of phenomena presented to us by a single act of attention ; and we classify any given individual under its proper group, by a direct intuition of its essential resemblance with that which is distinctive of the group to which it belongs.

As soon as we get within the province of reasoning, however, we are beyond the limits of direct observation. The result we want to arrive at, in the case of reasoning,

is still a judgment, as before ; but the two terms of the judgment (the subject and the predicate) lie so far apart from each other, that we cannot perceive or establish any connexion between them by direct observation. The only thing we can do, therefore, is to accomplish the thing, if possible, indirectly.

In order to do this, we find out a third term, with which both can be directly compared ; then, by establishing a relationship between each of them, and the third term, we are enabled to form a judgment respecting their mutual relations to each other. Thus, if $A = B$ and $B = C$, we know $A = C$, although we may have no direct means of comparison whatever. This is, of course, the most rudimentary idea possible of what we mean by reasoning, and presents a case in which none of the many difficulties and complications, which will occur in pursuing the subject further, are to be found. Still it gives the bare idea of what we mean by reasoning, in the outset. It shows us that it is simply a method of arriving at any given judgment by indirect means in place of an act of direct observation.

We have already pointed out the three fundamental ideas to which all the predicates that can be affirmed of anything whatever are reducible, namely, quality, quantity, and relation. We have shown, moreover, that the nature of a judgment is considerably modified, psychologically considered, according as we are making a qualitative, a quantitative, or a relational affirmation. In a qualitative judgment, we compare an individual with a species, or a species with a genus, as "the whale is a mammal ;" in a quantitative judgment, we compare an extended whole with its parts, or the parts with the whole, as, $a + b = c$, or $c = a + b$; in the relational judgment, we compare the proportions of things with each other, as the sides of a triangle with the sines of the opposite angles.

The whole theory of reasoning is so materially affected by

these categorical distinctions, that we shall now have to divide our analysis into three parts, and investigate the nature of reasoning—1st, in its *Qualitative*, 2ndly, in its *Relational*, and, 3rdly, in its *Quantitative* form.

I.—QUALITATIVE REASONING.

All natural classification results from the attempt to arrange things in groups according to their essential qualities. Hence, all qualitative reasoning has for its object either to find some general expression under which a number of individuals may be ranged, or, having the general expression, to apply it to the elucidation of particular cases. When we commence with particular instances, and rise to some general conclusion, we term the reasoning **INDUCTIVE**; when we commence with general propositions, and reason down to particular instances, we term it **DEDUCTIVE**.

1. **INDUCTIVE REASONING.**—Induction (*i.e.*, rising to general propositions from the observation of particular cases) appears at first sight to be a very simple procedure, which ought hardly to be dignified by the name of reasoning at all. If I observe, one by one, a number of individuals which have some common property, and then, classing them all together under a common name, predicate this property of the whole class by means of a general proposition, all I accomplish, is, simply to affirm collectively what my observation has enabled me to affirm singly already. This objection, it must be admitted, holds perfectly good respecting what is termed “*Inductio per simplicem enumerationem*.” In the procedure we have just detailed there is, in fact, no reasoning at all, *i.e.*, there is no procedure of the mind from the known to the unknown, but simply a summing-up of what has been already ascertained experimentally under a general form.

Induction, properly so-called, indicates the process by

which we draw some general conclusion respecting a whole class from the observation of merely a few, or comparatively few, individual instances. Thus, Dalton framed the general proposition, "that all chemical compounds are constituted of elements that might be represented numerically." Of course, it was not possible that he should have experienced for himself every kind of chemical compound ; still less that he or all mankind together could know this to be true in every separate case of combination by direct observation. Having found the law to hold good, however, in every single instance in which it was actually tested, he found himself warranted in drawing a general conclusion, which might be regarded as holding good universally.

The question comes, therefore, On what ground was he justified in drawing this conclusion ? We reply, it could not possibly be justified, except on the supposition of there being an order in nature, and this order, which we instinctively feel to hold good throughout the natural world, is reflected in the entire development of the human mind.

The whole labour of inductive research, aided by experiment, aims at bringing us to a more perfect view of that order in nature which is the preliminary condition of all qualitative reasoning. It seeks to bring us gradually to broader generalizations, to show us how the individual fact is involved in the general law, and thus to mould our highest mental generalizations into perfect harmony with the actual laws of nature herself. On what our belief in the order of nature rests is a point we do not at present discuss ; the question will have to come before us hereafter in a more general form.

2. DEDUCTIVE REASONING.—This is the mode of reasoning ordinarily expounded in books of formal logic, and of which the syllogism is given as the general type. We shall first give the ordinary explanation of the reasoning process, as involved in the syllogism, and then attempt to find out what are the real mental acts of which it is the expression.

Take the following trite example—

All men are mortal.

Caius is a man.

Therefore Caius is mortal.

If we can imagine a man named Caius seriously questioning the fact of his own mortality, we might, perhaps, employ the above form of argument to convince him of it. In what, then, does the argument consist? The thing to be proved or rendered certain is, that Caius is mortal. To do this we take a middle term, with which we can compare the subject and predicate of the conclusion. The middle term is the class, man. We first compare the class, man, with the attribute mortal, and find that, according to all human experience, the attribute of mortality is a distinctive mark of the whole. Then we compare Caius with the class, man, and find that he belongs to it. Lastly, by the law that whatever is true of the whole class must be true of every individual that belongs to it (*dictum de omni et nullo*), it follows that the attribute, mortal, must attach to Caius as well as to all others of the same kind.

The objection which seems to lie against the syllogism, as being a correct psychological type of the reasoning process, is, that the major, or general proposition, really involves the conclusion. We want to know if Caius be mortal or not, and we start by affirming that all men are mortal; but if we are able to affirm that all men are mortal, we must also have known already that Caius was so; and, conversely, to whatever extent there can be any doubt as to the mortality of Caius, there must also be the very same doubt as to the general truth of the mortality of all mankind.

The syllogism just cited may be a convenient way of stating our reason why we must hold Caius to be mortal, but it does not certainly represent the mode by which we arrive at this conclusion. If the inquiry really suggested itself to our

minds, "Is Caius, then, really mortal?" we should immediately fall back on our experience, and tacitly put what our experience dictates in comparison with the case before us. Such a tacit comparison, if expressed, would be something of this kind:—The relation which experience points out as existing between men universally, and the fact of their mortality, is precisely like the relation between Caius and the fact of his individual mortality. Thus the one truth is simply a particular instance of the other. The mind passes at once, intuitively, from the general case, as witnessed by experience, to the individual case now sought to be established; and the reasoning process, psychologically considered, consists in finding out the similarity of the relations which are involved in the two instances.

The value of this entire result must depend altogether upon the uniformity of the relationship involved in the general proposition, "All men are mortal;" so that here, exactly as in the case of induction, we have to fall back upon our conviction of a fixed order in nature; and only in proportion to our conviction of this, can the result of any deduction whatever be considered stable and sure.

Hence, there may be an infinite gradation in the validity of an argument, according as the evidence is stronger or weaker in reference to the certainty of the general statement; *i.e.*, just in proportion as it is to be regarded as an established fact in nature, or not. The certainty of such a general statement will depend upon two considerations:—1st, upon the degree of correspondence which exists between all the individuals which the class denotes; and, 2ndly, according as the particular attribute affirmed of the class can be regarded as more or less essential to it.

(1) Where the highest conditions of certainty exist; that is, where there is perfect community of nature in all individuals; and where we are dealing with some attribute which belongs essentially to that nature, the reasoning

reaches the highest possible degree of certitude. Take, for example, as mere illustration, the proposition—"Every man possesses a brain." Here the individuals comprehended in the general term "man" are not indeed absolutely alike, yet in all fundamental respects homogeneous; and the attribute ascribed to them is one which is quite essential to the idea of humanity. The conclusion, therefore, that Caius has a brain (notwithstanding Caius may represent a savage of Central Africa or of the Feejee Islands), is virtually indubitable, although there are but few cases comparatively, in comparison with the whole of mankind, in which we can know that this is the case by direct experience, observation, or testimony. We are so sure of the unity of the type, man, and so sure of the fixed order of nature in everything essentially appertaining to that type, that we have no doubt but that our conclusion, if put to the test, in any given case whatever, would be found to be perfectly verified.

(2) But now let us take a general proposition, relating to a class which includes in its nature a much greater variety of properties and of general structure. Let us take the proposition. "Every animal possesses a brain," and we feel at once that the affirmation is by no means certain; in other words, that the fact of possessing a brain is not so essentially distinctive of the class, animal, as it is of the type, man. Accordingly, any reasoning founded upon the relation between animals generally and the attribute of possessing a brain may be fallacious, although in many instances it might be perfectly correct.

(3) The same fallacy, again, would attach to any argument founded on a general proposition, in which the subject, indeed, is highly homogeneous, but where the attribute predicated of it is not of an obviously essential character. Thus, if we were to assert that all men are five-fingered, we might be led to exclude some exceptional individuals from the class, man, although they have every possible claim to

be ranked within it. The reason is, that the possession of five fingers on each hand does not touch the essential attributes of humanity, physically considered.

(4) Once more, where the subject of our general assertion indicates a class, the nature of which is not clearly and sharply defined, it becomes proportionally difficult to determine which are essential attributes and which are not. In such cases we often have to guess at the general conception under which the phenomena of the case can be summed up, to try our theory by as many instances as fall within our reach, and let our conclusion respecting all other instances hold good only so long as we find it sufficient to account for all the facts, and fail to discover any in which the theory is unsustained. Reasoning of this kind is termed hypothetical, and is valuable only as giving us a basis or a line of direction for further research. Thus the general proposition, that all the phenomena of light are caused by undulations, is an hypothesis ; and any mode by which we account for individual phenomena, that present themselves, on this principle must still be considered as hypothetical reasoning.

(5) Lastly, there is the case of analogical reasoning. In analogical reasoning we have not only a great diversity in the nature of the subjects treated of, but also a diversity in the predicates we attach to them. It is true there must still be a decided similarity in the relations of the general and the particular case ; but the terms themselves are both widely diverse. Thus we might show that human history must pass through various stages, and come to a natural close, on the ground of its analogy with the life of man. The analogy may be put in this form :—As the life of man : the stages of human existence, :: the life of humanity : the stages of human history. Here there is an evident similarity in the two pairs of relations, but both the terms are quite dissimilar ; and the conclusion, therefore, can never be considered in the light of a demonstrated fact. The value of

analogy, like that of hypothesis, is simply to direct research; and it can in most cases only be used profitably, even for this purpose, by minds possessed of great power of generalization and a deep insight into the more recondite laws and operation of nature.

All these stages in the validity of the reasoning process, we may remark in passing, are equally manifest in the sphere of inductive investigation. We have only to invert the terms of the question, and the same variations as to the certainty of the conclusion reappear, according as the particulars from which we start belong to a class in which the attributes are more or less perfectly defined, and the nature more or less homogeneous.

Starting, then, from mathematical reasoning, in which (as we shall soon show) the nature of the materials treated of is perfectly homogeneous, and the attributes few and sharply defined, we find a regular progression in the degrees of certainty and uncertainty attaching to our conclusions, just in proportion as the subjects treated of become less homogeneous, and their attributes more numerous, varied, and indistinct. We may make this clear by putting down a series of examples, in which the relations between the general and the particular case are compared together, and in which the descending scale of certitude in the result can be plainly marked:—

I.

$\left\{ \begin{array}{l} \text{The relation of the 3} \\ \text{angles in every triangle} \\ \text{to} \\ \text{two right angles} \end{array} \right\}$	is the same as	$\left\{ \begin{array}{l} \text{The relation of the 3} \\ \text{angles at A B C,} \\ \text{to} \\ \text{two right angles.} \end{array} \right\}$
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II.

$\left\{ \begin{array}{l} \text{The relation of all} \\ \text{men} \\ \text{to} \\ \text{a cerebral development} \end{array} \right\}$	is like	$\left\{ \begin{array}{l} \text{The relation of Caius} \\ \text{to} \\ \text{the brain we believe} \\ \text{Caius to possess.} \end{array} \right\}$
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III.

$$\left\{ \begin{array}{l} \text{The relation of all} \\ \text{animals} \\ \text{to} \\ \text{a digestive apparatus} \end{array} \right\}$$
is like

$$\left\{ \begin{array}{l} \text{The relation of this} \\ \text{tribe of Infusoria} \\ \text{to} \\ \text{the means of digesting} \\ \text{food.} \end{array} \right\}$$

IV.

$$\left\{ \begin{array}{l} \text{The relation of all} \\ \text{absolute monarchies} \\ \text{to} \\ \text{revolution and decay} \end{array} \right\}$$
is like

$$\left\{ \begin{array}{l} \text{The relation of the} \\ \text{Austrian Empire} \\ \text{to} \\ \text{its expected convulsions} \\ \text{and decadence.} \end{array} \right\}$$

V.

$$\left\{ \begin{array}{l} \text{The relation of man} \\ \text{to} \\ \text{the stages of human} \\ \text{life} \end{array} \right\}$$
is like

$$\left\{ \begin{array}{l} \text{The relation of hu-} \\ \text{manity} \\ \text{to} \\ \text{the stages of human} \\ \text{history.} \end{array} \right\}$$

Here the conclusion in No. I. is a mathematical certainty; in No. II. a physical certainty; in No. III. a high probability; in No. IV. a hypothetical conviction; in No. V. a mere suggestion as to what may be a natural parallel, grounded on the general analogy of the two cases. In every instance but the first (which comes within the province of quantitative reasoning) the mental process involved in the act of inference is simply an intuition of the similarity of the particular to the general relation, and the consequent establishment of a fixed connexion between the subject and predicate of the one, grounded on the conviction we have attained of the universal connexion which exists between them in the other. We come next to

II.—RELATIONAL REASONING.

All qualitative reasoning, whether in the inductive or deductive form, is based on the idea of classes, and the relation of the parts of comprehension to the whole. By means of induction we attempt to make our general notions

perfectly correspond with the natural orders of real existences, and connect together all things around us according to their essential attributes. By means of deduction we then reason down from the generalizations thus established to individual cases.

In the whole of this twofold procedure we are dealing simply with the qualities of things,—qualities which can be compared as like or unlike. We are seeking to find what attributes uniformly co-exist with certain others, so that whenever we see a given combination of qualities in nature we know immediately that some other quality must, according to the uniform order of nature, co-exist with it, though it may elude our direct observation.

In all comparisons of this kind we can go only to the extent of saying that one set of relations is like another. There is no identity in the cases, no exact measurement, no definite proportion. The very nature of the qualities contemplated precludes this; and the whole reasoning turns upon their mere co-existence, not upon their being more or less intense.

The moment, however, we turn from the co-existence of qualities, according to classes and sub-classes, to estimate the relative intensities of these qualities in different objects, the form of reasoning becomes changed.

If I reason thus—"All substances possess weight—air is a substance, therefore air possesses weight"—I simply reason qualitatively to the co-existence of a certain attribute in the substance termed air.

If I reason—"Water is heavier than oil, and oil is heavier than alcohol, therefore water is heavier than alcohol"—I am not touching the question of the co-existence of one attribute with another, but simply the question of their relative intensities in different objects.

In the former case, the compared relations take this form—

The relation of substances to weight generally } is like { The relation of the substance air to its weight.

In the latter case, the compared relations take this form—

The pressure of water in proportion to its bulk } is greater than { The pressure of alcohol in proportion to its bulk.

And, supposing we are unable to discover the difference in the intensities of pressure by direct observation, we might be able to do so by a comparison of those intensities with that of oil (the middle term) thus—

B

The relative weight of oil.



A The relative weight of water > The relative weight C of alcohol.

Here the reasoning depends on the comparison of weight, and a given bulk of water with weight, and a given bulk of alcohol through the medium of the comparison of both with weight and a given bulk of oil. If A, the first relation, is greater than B, the second relation, and B is greater than C, the third relation, then A must be greater than C.

The element of time, as involved in co-existence, however, is not necessarily excluded from the entire category of relational reasoning. There may be a comparison of the time of one event, in relation to some fixed period, with the time of some other event; in which case the terms greater than, or less than, will simply be converted into the terms before and

after, and the reasoning will then proceed just as before. Thus, I want to know whether John or Edward came home first, and I have no means of knowing except by comparing the arrival of both with that of a third person, Harry. Accordingly I reason—

John came home before Harry,
And Harry came home before Edward,
∴ John came before Edward.

Here the reason turns evidently upon the time-relation of events to each other.

There is yet another kind of relational reasoning we may mention, and that is where there are four terms in the analogy instead of three, and the subjects between which the analogies are drawn are not homogeneous. We want to know the price of 3 qrs. 7 lbs. of cheese ; and we find it by comparing 3 qrs. 7 lbs. with $1\frac{1}{2}$ cwt., whose price we know to be £2, 12s. The ordinary form of stating this is by an arithmetical analogy—

As $1\frac{1}{2}$ cwt. : £2, 12s. :: 3 qrs. 7 lbs. : £1, 8s. 2d. which, being put into form we have already employed to show the comparison of relations, would be—

The relation of $1\frac{1}{2}$ cwt. }
to }
£2, 12s. } is the same as The relation of 3 qrs.
 } 7 lbs.
 } to
 } £1, 8s. 2d.

The same form of reasoning occurs in trigonometry, and all branches of mathematics, in which reasoning is employed to establish the equalities of proportion or ratio. Just as all qualitative reasoning is a simple development of the formula—

A is like B.

So relational reasoning is a development of the formulas—

A { is greater or less than
 is before or after
 bears the same propor- } B
 tion to something else as

We have now, therefore, only one case left, that, namely, in which the whole of the reasoning process is a development of the formula

$$A = B.$$

This will lead us to the consideration of

III. — QUANTITATIVE REASONING.

Quantitative reasoning is based entirely upon the idea of space. Qualities taken alone do not admit of exact measurement, though they may still be roughly compared as to their relative intensities. Time, in like manner, taken alone, does not admit of exact measurement any more than ordinary qualities, though any event in time can be compared as before or after, and as longer or shorter, in respect to duration, than another. The proportions between two pairs of heterogeneous objects may also be compared, as those between a line and an angle, although no absolute or fixed quantity can in such cases be involved.

So soon, however, as definite measurement is introduced, we know that we have got into the category of quantity, properly so called ; and all our reasoning will now turn upon the indirect establishment of absolute equalities between the objects of our research.

Equalities, it is true, may be established between things in relation to time, force, value, motion, &c., as well as in relation to quantity ; but these can be established only through the intervention of space as the universal measure to them all. Time can only be measured precisely by the motion of some object in space ; force can only be measured exactly by the power it has of producing a motion, in which the spaces passed over shall be proportional to the intensities. Even value, if it has to be reduced to exact measurement, must be referred to weight ; and weight is merely a case of force that has, like all other, to be measured by motion,

Lastly, motion itself can be measured only by the relation subsisting between the spaces passed over and the times occupied in passing over them. In fine, wherever equality is predicated between any two things whatever, the basis of our knowledge can be found only in the perception of space; for, even number itself is grounded originally on units of space, and the formula $2 = 2$ is only true in the concrete, when each of the units involved is in its last analysis the symbol of equal magnitudes.

All quantitative reasoning, then, is but the application of the formula $A = B$ to cases where the equality of the two terms is not cognizable by direct observation. The simplest form of it is that in which we make a comparison of lines and surfaces, in order to establish relations of equality between them. This is what we ordinarily term geometrical reasoning.

The mental processes which underlie all geometrical reasoning are either the direct comparison of two magnitudes, by imagining one to be placed upon the other, and finding that they coincide in every respect; or the indirect comparison of them by means of a common term. In this case we compare the three magnitudes in pairs. First of all, we cognize $A = B$ by a direct observation, then we cognize $B = C$ by a direct observation; and this leads to a mental act, which is expressed by the axiom—"Things which are equal to the same thing are equal to each other, and from which we conclude $A = C$." This mental act can hardly be decomposed; it is the direct application of the concept of equality to a particular case, and contains in it the actual transition of our consciousness from the known to the unknown relation; that is to say, in other words, it contains in it the reasoning process as occupied with quantitative comparisons, in its barest and simplest form.

As we pursue the process of geometric reasoning onward, the cases to which it is applied become more and more

complex. Other axioms (which are really but expansions of the first or fundamental one), come into play, such as—

If equals be added to equals the wholes are equal.

If equals be taken from equals the remainders are equal.

If equals be added to unequals the wholes are unequal.

If equals be taken from unequals the wholes are unequal.

Here longer trains of comparisons must generally be employed in order to establish the equalities required ; but the mental process throughout is the same. The second term of every comparison becomes the first term of the next ; or equalities before cognized are introduced as intermediate steps ; and in this way the result is at length attained.

Another form of quantitative reasoning is the algebraical, or the method of elimination. An equation is the affirmation of equality between interpretable symbols. Every step in the equation is simply a reassertion of the same fundamental equality after certain equivalent subtractions, additions, or modifications of form, on both sides. The mind can thus proceed from one step to another, having a perfect intuition of equality in each case by a direct comparison of it with the preceding step.

Taking the geometrical and algebraical methods together, a scientific instrumentality is gained, by which quantitative reasoning can be applied to questions of statics and dynamics, and all other branches of natural philosophy, in which the quantities compared are representable by lines, surfaces, or interpretable symbols of any kind whatever.

CONCLUSION.

Looking back now over the whole theory of reasoning as above explained, we see that there is a regular progression from the case in which there is perfect equality in the terms compared, up to that in which there is only a certain proportion between them ; from proportion up to similarity ; from

similarity of the closest description onwards to similarity of a more general kind ; and at last to a mere similarity in the relations without there being any similarity whatever in the actual terms themselves. The points of difference in the terms, and the variety in the number of elements to be taken into account become greater, exactly in proportion as the similarity becomes less. Thus, in quantitative reasoning we have to consider only equalities of magnitude ; in relational reasoning, only proportions between magnitudes, it may be of the same, or it may be of different kinds ; while in qualitative reasoning, we have to consider and compare things which have indeed fundamentally the same nature, but whose nature is not perfectly defined, and involves a large number of attributes, both essential and non-essential. In analogical reasoning alone, the entire similarity in the nature of the things compared disappears, and we reason simply from the parallel which exists in the mode of comparison itself.

CHAPTER V.

ON THE A PRIORI ELEMENT IN OUR MENTAL PROCESSES GENERALLY.

DURING the middle ages, the well-known canon, “ *Nihil est in intellectu, quod non prius in sensu*,” was considered to be a complete expression of the truth in reference to the origin of our ideas. The senses, it was held, are, as it were, the windows of the soul, through which the facts of the outer world are let in to the mind ; and these facts, when thus let in, form the sole material out of which the subsequent superstructure of human knowledge is built up.

Descartes began his philosophy by casting doubts upon this philosophical axiom, and showed, with great acuteness, that it will not serve as a basis for any satisfactory theory of human knowledge. Having destroyed the credit of mere sense-knowledge, he took refuge in the doctrine of innate ideas.

Locke, in his turn, destroyed the credit of innate ideas, and returned pretty nearly to the old standpoint, though with a much deeper insight into the nature and bearings of the problem itself.

Leibnitz, half convinced by Locke, and yet unwilling to surrender altogether to the claims of empiricism, remodelled the middle-age formula by adding to it, “ *nisi intellectus ipse* ;” that is, he admitted that there is nothing in the intellect which has not come to it through the senses, but

affirmed that the intellect itself, the rational power, the forms of thought by which the material of the senses is raised into the region of intellectual ideas—that these must be prior to experience, and altogether independent of it.

In throwing out this consideration, Leibnitz introduced altogether another point of view into the whole controversy. He divided the question of ideas into two parts—the one relating to their matter, the other to their form—and struck the first note of a new philosophical era.

Kant took up the controversy from this Leibnitzian point of view, and aimed at discovering what in the entire range of human consciousness belongs to the matter of our knowledge, and what to the form. Whatever belongs to the former, he admitted, must be purely of an *à posteriori* character; but whatever belongs to the latter, he held, must as certainly be wholly *à priori*.

The question, viewed from this standpoint, presents altogether a different aspect from what it did in the hands of Descartes and Locke. The search which psychologists have made over and over again to find out which of our ideas come from experience, and which are *à priori*, is now seen to be wholly fruitless; and the inquiry assumes this shape. What element in all our intellectual processes comes from the mind itself as the inward and formative principle, and what element comes from without as the substantive or material principle?

That there are no ideas or judgments which are wholly *à priori*, must be, in the present state of psychological analysis, readily granted. Even those which seem to lay the very best claim to an *à priori* origin, such as the ideas of time and space, we hold, may be decomposed, and the method of their inward construction and growth pointed out. To show this, we refer our readers to the second part of this work, in which the perception of space is analyzed. This perception, when abstracted from any present objects with

which it is associated, becomes, like any other, generalized into an idea and then into a concept.

On the other hand, if the Sensationalist should meet us with the assertion that all our ideas and judgments are wholly and entirely the products of external experience, we may at once join issue on this point, and question whether any of them are; whether in the very simplest operations of mind—whether even in the formation of any primary perception, there is not a mental element at work which is prior to experience, and which enters into every mental act as an indispensable and most unquestionable factor. Let us look back upon the processes which our analysis has already detected and classified, and see what there is to justify this view of the case.

If we go back to the most primitive facts of mind, we find that there are certain impulses, and tendencies to action, which are impressed upon the nervous system prior to all consciousness. These impulses are admitted on all hands to be connate; or, at all events, to present modes of nervous action which are prior to and independent of all individual experience. If we next view the phenomena of instinct—instinct, that is, as seen in the animal, and as developed with equal clearness in man prior to its being supplanted by the superior influence of reason, here, too, we can trace a series of mental phenomena (phenomena, moreover, that imply design and purpose), which arise within us whenever the proper incentives of them occur, quite apart from any, even the least guidance of past experience. The same thing is true, in a modified sense, with regard to our whole sensational life. Every individual has a peculiar form and degree of sensibility of his own, which is clearly born with him, and with the production or modification of which personal experience has had nothing whatever to do.

All these phenomena tend to establish the fact that every human being has from his birth an individuality of his own.

We may see this individuality, more or less, from the very first, in the physical organization, in the peculiarity of temperament evinced by the tone of voice and the distinctive gestures ; in a word, in the specific type which the individual bears, from childhood upwards, to youth and maturity.

This individuality, at any rate, in whatever it may really consist, is wholly anterior to, and independent of, experience ; it must, therefore, spring out of some *à priori* peculiarity, and so far at least, must present a great human fact, standing in direct opposition to the purely *à posteriori* view of human mind and character.

But to this it might be replied that all these instinctive impulses, these distinctive modes of expression, and these traces of a peculiar individuality in each man, have nothing to do with our ideas ; that such phenomena may exist while yet our ideas are all formed from experience. This argument is, to a certain extent, valid but not wholly so. The moulding of our ideas into their distinctive shape may, it is true, be altogether experimental and *à posteriori*, notwithstanding the existence of any amount of original peculiarity in the instinctive, the sensational, and the emotional systems. But still it must be remembered that the material of these ideas comes originally from our sensational and emotive life, so that any peculiarity which this material may possess, arising out of the peculiar "*timbre*" of our sensibility, will be undoubtedly carried over into the ideas themselves.

And this it is, in fact, which mainly forms that distinctive feature of mind which we call *genius*. The root of every man's genius lies in the primitive type of his sensational and emotive nature. This type influences all his perceptions, thoughts, and actions ; it determines the hue under which every phenomenon from without presents itself to his consciousness ; it thus modifies the growth and development of all his ideas, and, through them, of his concepts, judgments,

and reasonings. In this respect, therefore, we may say, that there is an *à priori* element in them all, which mingles itself up with that whole experimental process by which our "mental tissue" is gradually constructed.

The question is, of course, still left open, whence this original type of individuality is derived? It might still be argued, that what experience and external influence cannot be supposed to effect, as far as the individual is concerned, may still be the result of circumstances acting, generation after generation, upon the race. This, of course, opens up a great deal of speculation in the department of transcendental physiology,—speculation which, as applied to the gradual modification of species, has not been unfruitful in probable results. Its application, however, to the question of individuality is more than doubtful. If we must go into such speculations at all, we should certainly argue that it is much more consonant with the highest idea of creation to regard the infinite varieties of individual character as being a part of the original idea of the creative mind, then as the fortuitous result of combinations of circumstances. How such combinations could produce a dozen different individualities in so many children of the very same parents, it is certainly beyond the reach of transcendental physiology to conceive, much more to explain.

The above considerations tend undoubtedly to establish the fact of an *à priori* element lying at the foundation of every human individuality. But, then, the construction of distinctive ideas, such as time, and space, and duty, and causality, and quantity, and quality, &c., it may be urged, does not depend on any peculiar human individuality. What have we to say, therefore, respecting all such distinctive ideas? Must we admit them to be wholly *à posteriori* in their origin, and thus confine the *à priori* element to that which forms the peculiarity of human genius and character? Or can we find anything in the intellectual

processes, formally considered, which must be regarded as *à priori* in its nature and origin ?

On this point our analysis is decisive. We have traced the construction of man's intellectual nature from the very first budding forth of intelligence up to the highest power of ratiocination, and there is only one element in the whole which we can single out as lying beyond the region of all possible analysis, and that is, the great twofold law of recognition and distinction—the power of perceiving similarities and differences. This power, we have seen, dates its activity back to the very first movements of our conscious life. No sooner do we begin to experience sensations than the mind begins to react upon them as the primary material of its intelligence. The same kinds of sensations, when they recur, are recognized, and different ones are perceived as different. The law of similarity begins its operations spontaneously ; like experiences unconsciously melt together, and unlike ones are held apart ; and thus commences, as we have already seen, even in infancy, the first stage of our intellectual being. As the mind develops, we find the very same twofold law lying tacitly at the basis of all its successive operations ; and we have shown how, by its simple application, one faculty after another is constructed until the very highest forms of mental activity are generated and brought to perfection. It is this twofold law, therefore, which lies at the root of all our intelligence, formally considered, which defies all further analysis, and which we must regard as being the one *à priori* basis of our whole rational nature.

So far as this great law of intelligence enters, therefore, into the composition of our ideas, we may say with strict accuracy that those ideas have an *à priori* element in their constitution. With regard to the question, How large an element in our ideas this *à priori* element constitutes ? this will have to be answered very differently, according to the

nature of the particular idea we are considering. Every idea possesses matter and form, *i.e.*, it possesses some basis derived from our connexion with the outer world, and bears upon it the type of that human intelligence which apprehended this outward material, thought it, and thus made it its own. But the relative proportion of the material and the formal element is very various. There are some of our ideas (those, for example, of sensible things around us) in which the matter is so predominant over the form, that we seem to apprehend the external reality exactly as it exists, and are not conscious, without the closest attention, of the part which the mind itself plays in the perceptions we form of them. As our ideas recede further from our primary perceptions, the formal element gradually increases, until at last the idea becomes almost the pure reflex of the laws of thought by which it exists, with scarcely a perceptible trace of any external element whatever.

Thus the perception of space, as we have seen, first arises in connexion with the motion of real objects around us. But gradually we begin to divest our space perceptions of their primary and more concrete character. We consider size, and form, and distance, apart from any particular size, any particular form, and any particular distance; and thus, in process of time, having abstracted all other modifications, we come to think of space *per se*; *i.e.*, the generalized idea of extension, apart from any particular application of it to the world without. This we term generally the idea of space;—an idea from which the external material has been almost wholly abstracted, while the intellectual form is left well nigh alone to represent the entire conception.

We cannot say, therefore, even in regard to these most abstract and formal of our ideas, that they are wholly of an *à priori* character. So far from that, we can trace their formation upwards, from their first groundwork in our perceptions to their most purely intellectual form. But yet, when we

consider how little of any external material they finally contain, and how largely they come to be the mere reflex of the primary laws of thought, we shall not be wrong in saying that their composition implies a vast predominance of the *à priori* element.

The doctrine of the *à priori* element in our mental processes may thus be summed up in a very few words. There are two ingredients in every mental operation, which are purely of an *à priori* character; these are, 1st, the distinctive type of our individuality, by which the whole material of our knowledge is coloured and modified; and, 2ndly, the great fundamental law of the intellect, by which the general form of our thoughts is moulded and fixed. While, therefore, on the one hand, we may truly say that there is no such thing as an *à priori* idea, we may with equal truth say, on the other hand, that there is no idea, however simple, which does not contain an *à priori* element mingled up both with its matter and with its form.

The same line of argument applies equally to our natural judgments. There is no such thing as a purely *à priori* judgment, any more than a purely *à priori* idea; although it is perfectly true, on the other hand, that every judgment we form contains an *à priori* element in it. Every quantitative judgment, for example, may be reduced to the formulas, "A is equal to B," or "A is not equal to B." The material which is indicated by the symbols A and B are in this case originally real concrete magnitudes which appeal to us through the senses. The form of the judgment in both cases represents the indecomposable mental acts by which we have a direct intuitive cognition of the equality or inequality of such magnitudes. These two mental acts correspond to the law of identity and the law of contradiction, which are simply the logical expressions for what we term in psychology the laws of recognition and distinction.

If now we turn to the qualitative judgment we must here

take as our formula the expression, "A is like B ;" "like" meaning that the two objects present one or more attributes in common. Here the terms may consist of any concepts we please, from the most concrete to the most abstract. The more concrete the terms the larger is the element of direct experience which is manifested in the judgment. The more abstract the terms the more does the judgment represent the mere law of thought from which it internally originates.

Every universal judgment (*e.g.*, All men are mortal) transcends, it is true, the range of experience as to its matter as well as its form, and is based, as we before said, on the conviction we have of the uniformity of the laws of nature. But even this conviction is a mental result, which springs out of the principle of classification as applied to the objects of nature around us. The judgment, "All men are rational," expresses simply the fact that whenever we see a man we at once classify him in that group which is distinguished by the attribute of reason. The universal judgment is accordingly a direct application of the law of identity $A = A$, or $\text{Man} = \text{Man}$. If the equation here shown be true, then whatever is essential to man must reappear wherever a human being exists, and *vice versa*. Thus the laws of identity and contradiction are simply a translation into logical terms of the fundamental laws of psychology, identity, and contradiction on the one hand, recognition and distinction on the other, alike exhibiting the one indecomposable mental act which lies at the basis of all our judgments.

PART V.

THE HUMAN REASON.

CHAPTER I.

EXPLANATION OF WHAT WE ARE TO UNDERSTAND BY THE TERM REASON.

ALMOST all languages possess two different words corresponding more or less closely to the terms *understanding* and *reason*. In the French language we have the words *intelligence* and *raison*; and, in German, the still more distinctive terms, *Verstand* and *Vernunft*. Many attempts have been made to define with some degree of sharpness the precise difference between these two ideas. Such attempts, however, have for the most part been unsatisfactory, from the fact of their being based upon the supposition that man possesses a certain number of separate and peculiar faculties. Every effort to make out a distinct faculty called understanding, and another distinct faculty called reason, has failed, and necessarily so, from the false point of view whence the whole question is regarded. All our intellectual processes so completely interpenetrate each other, that it is impossible to separate them into distinct faculties, and assign distinct provinces to each. Still, there must be some good ground for the use of the term reason as a peculiar form of intelligence; and it is this ground which we have now to investigate.

The best way in which we can set out on this investigation is to consider, first of all, what would be defective in the whole structure of the human mind, were it to possess all the powers of intelligence we have already noted, and nothing more. There are many inhabitants of our lunatic asylums who possess all these powers to perfection. They

have clear perceptions, and perfectly-formed ideas ; they have memory ; the faculty of speech, often to a marvellous degree ; and, besides this, the power of reasoning logically, sometimes with great acuteness, upon almost any given data. What is it then, that fails ? Simply this,—they have lost their reason ; and, therefore, can hold no proper place in the ordinary life and intercourse of humanity.

But what do we mean when we say that they have lost their reason ? They can talk and argue, and employ all kinds of ideas and concepts in a perfectly regular and normal way. The point, it is plain, in which they fail is, in the power of co-ordinating all their intellectual processes, so as to produce in the aggregate a rational result. Thus they often mistake sensations for ideas, and *vice versâ* ; they form notions, and regard them as objective facts ; they confuse, in this way, the product of one faculty with that of another, and thus disturb all the normal foundations both of faith and knowledge.

We speak again, in common life, of a person acting according to reason ; being reasonable in his views ; being able to give a reason for what he does. There is one fundamental idea which runs through all expressions of this nature ; and that is, the idea of acting consciously upon a plan which has been duly considered and voluntarily adapted to the circumstances of each case. This idea of the nature of reason, again, fully coincides with that before noticed, namely, that it is to be regarded on the co-ordinating power in relation to all our other intellectual processes—as that which gives unity and solidarity to them, aiding us at once in the pursuit of truth, and in adapting our lives to the state of things in which we exist.

This conception of the province of reason again fully coincides with that which we ought to regard as the highest form of life. All life, as has been well shown by a recent author, may be regarded as an expression of the

power which every living being has to adapt itself to its environment. Every animal is formed to exist in harmony with the peculiar elements of nature which surround it. Life, considered as active and objective, consists in the capacity of keeping up the proper adjustment between the animal organization on the one side, and the conditions of its well-being on the other. The vital functions can go forward only so long as this adjustment is maintained inviolate. Animal life in its continuity is only possible on the basis of such a constant adjustment.

What is instinctive to the animal tribes becomes reason, for the most part, in the case of man. The primeval savage adapts himself to his environment, shelters himself from the weather, hunts wild animals, clothes himself in their skins, and leads a life in which we see the force of instinct just struggling out into the higher form of reason. Feeble and infantile as this reason is, still it governs all his faculties, co-ordinates all his actions, and enables him to adjust himself to the circumstance around him with sufficient efficacy to maintain his existence and continue his species.

The age in which pasture and agriculture begin to show some vitality indicates already a much higher development of the reason. To prepare the ground, sow the seed, watch the young plant, and gather in the harvest, are processes which require foresight and calculation. Reason, in directing the entire course of human action as here manifested, draws every mental and bodily power into its service. It governs the motives, the thoughts, the actions of the man, and prompts him to provide for his own sustenance and happiness upon a much more elaborate scale than is done by the mere savage.

As society increases, new problems of life arise ; those, namely, which seek to adjust the relations of property, and govern the actions of men in reference to each other. Social life thus takes its start ; and reason, as applied to the

necessities and wants of society, gives rise to law, government, jurisprudence, and, last of all, perhaps, to social science. Here, as in the case of the lowest animalcule, life, though now elevated to its higher form, can be kept up only by a proper adjustment of human activity to the new series of circumstances which every new development successively involves.

Then, lastly, we come to the age of science, where we see the human reason in its more mature form investigating nature, interpreting its laws, and then making all subservient to the wants of mankind. The age of science, accordingly, answers, necessarily, to a much more elevated and civilized form of human life than the ages could possibly be which preceded it. In the present day there is hardly one of what we now regard as the commonest wants of human life, which does not owe its existence to some wheel of that vast and complicated scientific machinery which the human mind has worked out, and which now gives direction to the greater part of the thoughts and energies of mankind. Practical and applied science is thus on a large scale a mighty adjustment between the powers of nature and the wants of man ; and the amount of human life bears a due proportion to the vastness of the scale on which this adjustment takes place.

But we are not only surrounded by elements or nature, which we adapt to our personal wants and conveniences,—we are surrounded by forms of infinite beauty, by a universe which displays the most elaborate care and design, by a world, too, of human action ; and to these objective facts and realities the mind has respondent thoughts, emotions, sympathies, and desires. Reason, then, has once more to resume its task, and show us how we are to adapt our life, the higher life of the soul, to this environment of Divine beneficence and human brotherhood. Morality and religion are essential to the full bloom of the human mind and the

highest form of society ; and it is the reason which again in this highest sense adjusts the relations between the actions and habits of man, and the moral universe in the midst of which he is placed.

The great thing in which the exercise of reason differs from all the other intellectual processes is, its capacity of dealing with a multiplicity of objects and ideas at once, and drawing general results out of them all. In memory, in imagination, in dealing with concepts, whether in the form of a simple judgment or a syllogistic act of reasoning, we have simply to do with one or two ideas at a time, which are either recalled, or embellished, or compared together. But in exercising our reason, we hold many threads in our hands, and bring them all into one centre, so as to educe a general result. The extent to which the reason is developed in any given case (whether of an individual or a nation) is measured exactly by the number and the remoteness of the relations which can be grasped at one single view. The savage can show great acuteness and cunning in dealing with a few simple relations ; but, beyond this capability, he becomes utterly baffled. The wild Indian can plan a secret attack upon his enemy ; but the attempt to grasp the strategical relations of a modern battle lies entirely beyond his reach. And so in every case, the remoteness of the means towards securing any given end is an almost perfect measure of the power of the reason which grasps and applies them.

From the explanations now given, it will be at once understood why reason is justly called the truth-organ of the human soul, the guide and director of human activity. What is truth, but a just apprehension of the relations of things in this universe to which we belong ? And in what other light can reason be viewed, than as the truth-organ of the soul, when it is by reason alone that these relations in all their complexity can be known or appreciated ? Different, therefore, as reason is in its character and results

from the mere exercise of the logical understanding, yet it does not involve any fundamentally different law of mental activity. The cognition of relations and differences on a small scale, and between a limited number of objects or ideas, is involved alike in perception, ideation, and all the acts of the logical understanding. It is the power of cognizing remote relations and differences, and those as existing between a larger variety of objects which forms the distinctive and essential characteristic of the human reason. Reason, therefore, simply exhibits the great law of intelligence in its highest intensity, forming as we said, the truth-organ of the soul.

Truth, however, is very various in its nature and materials, and very variously apprehended accordingly. It is a truth that this sheet of paper is now lying before me ; that Napoleon Buonaparte existed ; that the angles at the base of an isosceles triangle are equal ; that the earth moves round the sun ; that every effect must have a cause. But how different in these cases is the material of which the truth consists—the mental process by which it is apprehended—the evidence on which it rests—and the conviction with which it can be forced on the minds of others ? In some cases, we say that truth is the reflex of knowledge ; in others, of faith ; in others, simply of opinion. To enter fully, therefore into the psychology of the human reason, we must investigate the nature and the grounds of human knowledge.

CHAPTER II.

ON KNOWLEDGE.

THE objection has been urged against instituting any philosophical inquiry into the possibility and grounds of human knowledge, that such an inquiry presupposes the very conclusion that we wish to arrive at. The faculty of knowing can only be comprehended by the knowing faculty. The very fact of instituting a research, therefore, admits the existence and validity of the power by which all research must be carried on.

Every one must admit that he has a number of phenomena constantly passing through his consciousness. For all our thoughts are phenomena of consciousness, and, to deny is to think ; we cannot deny that we think, therefore, without contradicting ourselves in the very act of doing so. The phenomena which pass through the consciousness, however, do not necessarily form what we term knowledge. We know, indeed, that they exist ; but that is all. They do not, from the fact of their existence, necessarily imply that there is anything corresponding to them apart from our own consciousness. By knowledge, however, we mean some fact of consciousness which we are quite sure corresponds with some fact in nature, and which becomes equally certain to others as soon as they can be made to go through the same mental process, in order to arrive at it, as we have done ourselves. These are the two conditions of all knowledge, properly so-called. We may have a thousand notions, ideas, propositions, trains of thought passing through the mind, and

all possessing in themselves perfect consistency ; but so long as we are not perfectly sure that they are the counterparts of, or are correlated with, certain outward facts, which remain facts quite irrespective of our conception of them, there can be no knowledge in the case. We may, again, possess ideas which we have a strong reason to think do correspond with some objective reality ; but, if we are unable to impose that conviction upon other minds, and if it will not stand the test of the common reason of humanity, we cannot regard our certainty as complete, or the knowledge it seems to guarantee as valid and sure.

If knowledge, then, be a fact of consciousness, which we are quite sure is correlated with some fact of nature, then there must be some ground or principle on which this surety rests. Without taking the trouble to expound and criticize the various theories of certitude which different philosophies have maintained, we shall simply take a few typal cases, and see if we can recognize any one ground of certitude in them all.

Let us begin with the simplest case which it is possible to adduce. I am now sitting at my desk ; I hold a pen in my hand ; a sheet of paper lies before me ; I see the window on one side of the room and the fireplace on the other. All these are facts which it is certainly no exaggeration to say that I know. The mental images excited by these objects are such that I am quite sure there is something corresponding to them externally. Is there anything, I would ask, of which I can be more sure than this ? Could any of those philosophers who affirm that there is no certitude connected with our sensational and perceptive life, but that all certitude has to do with the general and the abstract—could any of these affirm that it is possible for me to doubt the facts above stated ?

Take the outward test of certitude, I have proposed—that of the concurrent testimony of other minds. Bring any

friend or any sane human being into the room, place him in the same chair, before the same desk, with the same pen in his hand, and see if he is not compelled to have precisely the same conviction that I have, whether he will or no. There is, manifestly, only one possible result to every sane mind from such a test.

Now, let us consider the ground of our certitude in this instance. We need not again go through all the steps of the perceptive process, by which we are brought to recognize these objects through the aid of the senses. This process, indeed, has little or nothing to do with the ground of certitude. All we need notice is this, that we are compelled, when thus confronted with external objects, to believe in their objective existence, and that the mind has, in this instance, no choice of its own. It must suffer the sensation ; it must interpret that sensation in a particular way ; no effort of its own can enable it to rise above the double compulsion under which it is laid by the presence of the real object ; in a word, the co-operation of mind and nature here is such that it can be followed only by one result. How, then, shall we formulate the ground of certainty which here exists ? All we can say is, that it is a fixed necessity of our mental nature that we should know these facts to be true. The truth, indeed, in this instance, is not necessary truth ; but it is none the less certain ; nor does it in any the less degree rest upon a necessity of our mental nature.

Now, let us take an instance of a somewhat more general character. Let us take the proposition, "Snow is white." Of the truth of this proposition, I apprehend, we have just as little doubt as we have of those above stated, but yet there is an element of generality in it which is wholly wanting in the other instances. Those instances simply represented the fact of the present moment. The proposition, "Snow is white," represents an abiding and continual fact. The former might never be true again in the whole course of our life's experi-

ence ; the latter we know will always be true as long as the laws of nature remain as they are. What, then, is the ground of certainty here ? Fundamentally, it is the same as in the former case. My organic and mental nature, when put side by side with snow, is compelled to produce a sensation of whiteness. This is, again, the one fundamental necessity out of which the whole certainty springs. Bring other men in contact with snow, and they have the sensation of whiteness also. Repeat the experiment any number of times, and the same result uniformly follows. Multiply your own experience by that of all other human beings whom you in any way come in contact with, and still the fact is confirmed anew. The individual fact, accordingly, that I am compelled to have a sensation of whiteness when I am actually looking at the snow, at any given time, becomes now generalized into the wider fact that I have always had the same experience under similar circumstances ; that all men, as far as I can learn, are similarly affected ; and that, consequently, the proposition that snow is white is true to the utmost limit that my experience can carry me. Hence, within the limits of experience, I may be said to know it, and my knowledge, as before, rests on a necessity of my mental nature ; for, with these multifarious experiences before me, I cannot possibly help drawing this conclusion.

Now, let us take some examples of another description altogether. Certainly, we may be said to know the following propositions as undoubtedly true :—That two things which are equal to the same are equal to each other ; that, if equals be added to equals, the wholes will be equal ; that it is impossible for the same thing to be and not to be ; that two distinct material objects cannot occupy the same space, &c. Here, again, as before, we are simply met by a necessity in our mental constitution. It is true we may not think about these matters at all, and remain therefore, wholly unconscious of the truths here involved. But, admitting

that actual cases are brought before our experience in which the points above stated are suggested to our minds, and the truths involved in them have to be decided upon, there is a positive necessity for us to decide only in one way ; for the contrary of these truths is unthinkable, and would oppose itself to our whole mental constitution if once we attempted to affirm them.

The case is not very different with truths which are not at once self-evident, but which lie at a few removes from a self-evident proposition. We know, for example, that the angles at the base of an isosceles triangle are equal ; that the three angles of a triangle are equal to two right angles ; and many other facts of a similar nature. These are not self-evident, nor are their opposites at once seen to be contradictory, but they are known through the intervention of some two or more intermediate facts, each one of which is self-evident ; so that the conclusion cannot be rejected without doing violence to the mental necessity involved in the process of demonstration. In all these cases alike, therefore, there is one fundamental ground of certainty, namely, a mental necessity to regard those facts of consciousness, to which we attach the attribute of knowledge, as standing in exact correlation with certain facts or relations of nature, which remain the same, quite independently of our own knowledge or perception of them.

And if, finally, we take the instance of knowledge, which rests wholly upon testimony or evidence, such as a well-known historical fact, or the conviction of a criminal in a court of law, still the groundwork of the certainty remains the same ; for our minds are so constituted that a certain concurrence of testimony, and a certain strength of evidence, is necessarily followed by conviction, both in our own minds and in those of all our fellow-creatures whose faculties are in a normal state. We may draw, therefore, the general conclusion, that wherever knowledge, in the proper sense of the

term, exists, it is based fundamentally upon a mental necessity, and that all attempts to prove a thing, not at once self-evident, to be true, is simply to bring it within the limits of those facts which can at once plead this mental necessity in their favour. Deeper than this it is impossible for us to go. What we must necessarily believe, and what all other men, when placed in the same circumstances, are obliged also to admit, rests upon the surest and completest kind of certitude of which the human mind is capable.

Now, in looking over these instances which we have adduced we cannot fail to see that, although the certainty is about equally strong in every case, yet there is a marked difference in the nature of the knowledge we possess of the different facts brought forward. Some of the facts affirm the existence of a specific material reality with which we stand face to face ; others of them affirm no specific reality, but merely a relation which remains the same, whatever be the reality to which it is applied. The fact that the desk is now before me affirms a present material reality ; the fact that snow is white affirms a reality which if not present now, yet has been present, and may be so again. On the contrary, the fact that the whole is greater than a part is quite independent of any specific reality whatever. It is equally true whether the application we make of it refers to space, or time, or substance, or force, or number, or anything else within the sphere of human ideas.

Now these two different kinds of affirmation mark out two different kinds of mental phenomena, which we have indeed already investigated, but not yet put distinctly in contrast from our present point of view. There is one series of mental facts which brings us directly into contact with realities ; there is another series which enables us only to appreciate relations. Our fundamental feelings and sensations involve in them the affirmation of something really existing. This is the case, for example, in the feeling of self-conscious-

ness, by which we tacitly affirm our own existence ; it is equally the case with regard to our sensational or world-consciousness, which in like manner affirms a real existence apart from ourselves. A me and a not-me, a self and a not-self, are two fundamental assertions which are virtually made in the very first and most primitive acts of our conscious mental existence,—assertions which underlie our mental processes long before they are realized in any distinct reflective idea, and which are as certain as any universal necessity of our nature can make them.

On the other hand, the moment we get beyond the well-nigh passive mental phenomena, and begin to see the movements of human thought in relation to the realities thus affirmed, we find that there are certain fundamental laws, according to which all our thinking proceeds. Perception is an early and somewhat inexplicit mode of thinking ; ideation indicates a more advanced mode of thinking ; the logical processes form a more explicit kind of thinking still—all the efforts of our reason exhibit thought ever moving onwards, according to its great fundamental laws, to the attainment of specific human knowledge. What these laws are we have already seen,—they are the laws of attraction and repulsion, of assimilation and differentiation, of uniting by virtue of resemblances, and separating by virtue of distinctions. All thinking, accordingly, consists in establishing relations. I affirm A as distinct from B. In doing this I establish in my mind the continued identity of A, as something which is not and cannot become B ; and the non-identity of B with what I have already thought as A. No thinking process can go on without our having the power of making these fundamental distinctions. Hence, they have been termed *The law of identity* and *The law of contradiction*, and have been laid down as the two great corner-stones of all logical processes,—being at the same time, as we now see, the fundamental psychological laws of all the processes of thinking.

But further. In the fact of self-consciousness we distinguish ourselves—the agent from the result of our action. Here is activity on the one side ; and this activity results in an act on the other. Hence we come to the consciousness, that wherever there is activity there must be correlated with it an act, and that wherever there is an act it must have been preceded by an activity. Put into more ordinary language, this appears, as the well-known axiom, that every effect must have a cause, and every cause must produce an effect. This forms, accordingly, the third great fundamental law—*The law of sufficient reason*; a law which lies at the foundation of our rational processes as completely and universally as the other two lie at the foundation of those mental operations which are, more formally speaking, logical. Without the law of identity and contradiction there can be no distinction of ideas, no natural logic, no reasoning ; and without the law of sufficient reasoning there can be no connexion between events, no knowledge of the laws of nature, no science. Thus all the fundamental principles both of logic and science are alike simple expressions of what is contained in the one great double law of our whole intellectual activity—the law of recognition and distinction.

From these considerations we can now fully comprehend the different kinds of knowledge involved in the two classes of instances we have before adduced. The one kind refers to the material of our knowledge, the other simply to the form. I am obliged, by a necessity of my whole mental constitution, to affirm my own existence, and the existence of other things around me. The opposite to these affirmations, however, is neither an impossibility nor a contradiction. There is no impossibility or contradiction in the thought, that my desk and pen do not exist; that snow is not white ; nay, that I do not exist myself. On the other hand, the opposite to that other class of truths, in which we affirm fixed relations, is absolutely impossible and unthinkable. It is per-

fectly unthinkable that a whole is no greater than a part; that if equals be added to equals the wholes are not equal; that the same thing may be and not be at the same time, &c. As these are direct applications of the laws of thought it is inconceivable that the truth should be otherwise; for as we can only think at all in accordance with these laws, it involves a pure contradiction when we attempt to think anything which stands in blank opposition to them. In the former case we call the opposite an absurdity; in the latter case we call it a contradiction.

Although the truth itself in the one case may be contingent, and in the other necessary, yet we must not fail to observe that the knowledge of the one as well as the other rests upon a necessity of our mental constitution, and carries with it conviction to every mind when placed in the same circumstances as ourselves. This is at once the fundamental character and condition of all knowledge of a positive nature, and to which perfect certitude can be attached.

CHAPTER III.

CLASSIFICATION OF KNOWLEDGE FROM DIFFERENT POINTS OF VIEW.

I. Human knowledge may be regarded in relation to its *origin*. As such, it has been classified by many of the schools of philosophy under the two heads of *à posteriori* and *à priori* knowledge. Locke, who professedly rejected everything of an *à priori* character, still divided our ideas into those from sensation and those from reflexion. Psychologists of every school have recognized some difference between the two kinds of ideas expressed by these respective terms. It remains, therefore, for us now to consider what new light can be thrown upon this question by the psychological principles laid down in the present work.

First, then, with regard to *à posteriori* knowledge, there can be no real difference of opinion in regard to its existence and its general characteristics. We know that we possess sensations and perceptions; we know that these form the groundwork, at any rate, of the great mass of human ideas; and that these ideas, generalized as they are from our sensational experiences, enter as the main ingredient into the whole superstructure of human knowledge. It is when we come to the question of *à priori* knowledge that the real difficulty commences.

In order to relieve this difficulty, let us make in the outset one important distinction—I mean the distinction between an

à priori factor, or condition underlying the mental processes, by which knowledge is obtained, and *à priori* knowledge itself. We have already seen in a former chapter that an *à priori* element exists in all our mental operations. There is, on the one hand, the individuality of every individual, which to himself is purely *à priori*, *i.e.*, born with him. On the other hand, we have the great laws of our intellectual activity, the laws by which we assimilate, on the one side, and eliminate on the other. These laws are *à priori* also, being, in fact, the basis, formally speaking, of all human intelligence, the norm, by which the mind ever operates. The laws of mind, however, are not ideas, nor do they constitute knowledge. They produce nothing, but merely guide and direct the mind, in its operation, when some actual material of knowledge is presented to its attention.

In order to create knowledge, there must of necessity be two factors, the one giving the matter, the other the form. It is not essential, however, that the material of knowledge should all come from the outer world. Wherever the intellectual faculties stand face to face with any real substantive existence, there may be some actual material of knowledge. Such an existence we find not only in the world of matter, but also in the world of mind. The soul is a real existence ; its laws and attributes present themselves to the self-conscious thinking mind as something which it can perceive, and know. Consequently, there may exist, as Locke clearly affirmed, not only ideas from sensation, but ideas from reflexion, *i.e.*, ideas rising from the inward observation, which the mind can make of its own nature and operations. But this knowledge, be it observed, is equally based on experience with that which comes from the external world. That is to say, it is not knowledge which the mind possesses in the form of innate ideas *ab initio*; neither is it knowledge which the mind can think out for itself simply by the force of its own intellectual power. It is knowledge

which is given in an actual mental experience, and which has to be received and assimilated exactly in the same way as all other ideas are. In brief, we may say, that there is in every man an outer and an inner sense ; that while the outer sense brings us into contact with material, the inner sense brings us in contact with spiritual or ideal existence ; and that knowledge may then be constructed out of either.

From these explanations we may draw two conclusions. First, that if *à priori* knowledge means knowledge which we possess prior to, or in any way independent of, experience, then there is no such thing as *à priori* knowledge at all. But, secondly, if *à priori* knowledge means merely knowledge which does not come from the outer world, but entirely from the mind itself, then *à priori* knowledge in this sense can and does exist, although it may still be true that, but for the stimuli derived from the world, our mental development might never be sufficient to open the internal senses, and reveal the mind to its own observation. However this may be, it remains true that when the mind is thus developed, it acquires "ideas of reflexion," in which no element from the outer world necessarily mingles, as the material of which they are constituted. Thus it may be perfectly true that, but for the stimuli applied through the senses, we should never be able to perceive, think, doubt, believe, know, will, reason, love, hate, &c. ; yet, when the mind is once so far aroused and developed as to perform these operations, we are led by inward reflexion to gain the ideas of perception, of thought, of doubt, of belief, of knowledge, of volition, of reason, of love, of hatred, and the like, which ideas the external world has nothing to do with, and with which it possesses no analogy whatever.

II. Secondly, we may regard knowledge in relation to the directness of the channel through which it comes. Viewed in this light, it is either mediate or immediate, *i.e.*, its validity is either manifest at once without any further proof,

or it may require intermediate propositions in order to make it perfectly evident.

There are some things, as we before showed, which it is impossible for us not to know. There is a necessity in our intellectual nature, when brought in contact with the realities around us, which forces us to see and believe many truths. These are truths of which the opposite is either impossible or absurd ; impossible, if they stand in contradiction to our formal knowledge ; absurd, if they stand in contradiction to that which the outer or inner senses directly reveal as actually existing. This direct and immediate knowledge is the most certain of all ; it requires but one single application of that test of necessity, upon which, as a real basis, all our certitude finally rests.

Starting, however, from self-evident propositions, we may proceed step by step to others which are not self-evident. In order to do this successfully, the law of self-evidence or necessity must be applied at every successive step, as in the case of mathematical or syllogistic reasoning ; and in proportion to the completeness with which this can be accomplished will be the certainty of the final result. In mathematics, where the terms of the question are always few and simple, and where the test of necessity, and the impossibility of the contrary, is very easily applied, the utmost certainty may accompany us through a long chain of reasoning. In real science, where the possibility of error in the application of the test is greater, the certainty of the conclusion becomes less and less, in proportion to the length of the reasoning. And, in questions where cumulative evidence only is possible the certainty will be in direct ratio to the number and variety of the converging rays of evidence which tend to render the opposite belief morally impossible. Where these converging lines of evidence are few and difficult of access, as in the case of historical events long past, and resting on but few direct witnesses, the uncertainty becomes too great for the facts to

be classified under the category of knowledge at all, and we then include them within the province of belief.

III. Knowledge may be classified still further in relation to the actual realities, in face of which it stands, and by which it is conditioned. Every separate reality which comes in contact with the mental faculties produces some specific result in relation to our knowledge. Any classification, therefore, we can make of the realms of reality, based upon the mode in which they affect and influence the consciousness, will give us at the same time a classification of human knowledge itself, as regarded from this point of view.

What are, then, the regions of fact within which all our actual knowledge must move? First and foremost, there are the phenomena of the external world, known to us through the medium of the senses, and forming the basis of the whole superstructure of science, properly so called. Then, next, there is the region of mental phenomena. So far as these phenomena belong to our own minds, we have a direct and immediate certainty that they exist, and exist in a certain form. With regard to mental phenomena as they exist in others, we have not the same direct certainty as we have with regard to our own. The certainty, however, that such phenomena exist in others is so great, that we cannot possibly resist it, although we cannot bring their exact nature and characteristics to the test of human experience as clearly as we can in the case of knowledge resting on external facts. Hence the certainty we possess respecting the precise nature of mental phenomena not belonging to our own minds must be put down as secondary to that which we possess of external objects.

Now, the question comes, whether these two spheres of knowledge include the whole world of reality to which we have definite and positive access. Is not the Absolute, the Infinite, the Divinity, another object of human knowledge, which does not fall within either of the two preceding

categories? That we are morally bound to accept the fact of an Absolute, we hold to be indubitable, and shall by and by give our reasons for doing so; but it is no less true, that we cannot include this conviction within the definition of knowledge, properly so called. Knowledge is that which rests on objective as well as subjective grounds. Wherever it exists, we can bring others face to face with the reality, and compel their assent to it. The conviction of a Supreme Being rests on subjective grounds, both intellectual and moral, and on subjective grounds only; and this is the characteristic, as we shall see, not of knowledge, but of faith. We cannot bring a fellow-creature face to face with the Divine reality, and oblige a mental acquiescence in it, as we can do with a palpable fact of nature; in other words, God is not any object of human knowledge, but is the highest object of human belief.

There is one other sphere, however, besides the material and the mental world which may be properly included within the region of knowledge. The actions of men, viewed in connexion with our moral ideas and emotions, form a sphere of realities with which we come into immediate contact, and which have the power of compelling our moral judgments either one way or the other. In like manner, certain external forms, viewed in connexion with our æsthetic ideas and emotions, present a sphere of reality which can compel our æsthetic judgment to pronounce them beautiful or the reverse. When we speak of reality in connexion with the good and the beautiful, we do not, it is true, speak of it in the same sense as we do of material objects. It is, after all, an ideal reality—a reality which is created by our own minds. Still, it is so far created according to certain fixed laws of our being, that no one can withdraw himself from the precincts of the beautiful and the good. Moreover, both the tests of real knowledge are applicable in these two cases—namely, 1st, that to deny the positive existence of the good or the

beautiful would be chargeable with absurdity ; and, 2ndly, that we can so far bring up our fellow-creatures face to face with these ideal realities, that they cannot, under pain of the same charge of absurdity, fail to recognize the truth of what we affirm, either in regard to a palpably good action or a palpably beautiful object. On these grounds, therefore, we should argue for the admission both of æsthetics and morals, up to a certain point, within the sphere of positive knowledge, and, consequently, of positive science.

IV. There is still another point of view from which knowledge can be contemplated, and that is the form, psychologically speaking, in which it presents itself to our minds. Viewed in relation to the form, our knowledge may be either, 1st, intuitive, or, 2ndly, logical. This distinction is based upon the difference between the particular and the general, the individual and the abstract.

Individual existences we know only by a direct perception or intuition. What this perception includes and involves, we have already fully explained. The mental operations underlying it, as we saw, are, in fact, fundamentally the same as those which are developed in all other stages of our intellectual life, with the one difference only, that they are less explicit. Hence, our perceptive knowledge, while enabling us to recognize, observe, and classify individual objects as they are presented to our view, does not lead us to generalize them any further, or so to separate their qualities as to create abstract ideas. On the other hand, while it shows the lowest degree of intellectual form, it possesses the highest degree of material reality. Coming, as they do, fresh from the object, our intuitions are more vivid, more real, more replete our freshness and feeling, and less influenced by our own mental habits than our more abstract ideas can possibly be. Hence, while intuitive knowledge is less explicit and less scientific than any other, it is just so much the more direct, vivid, and inexhaustible in its materials.

It is not only the objects of nature around us, however, which form the material of intuition ; we have, also, a direct intuition of the beautiful and the good. Artistic genius and moral excellence rest mainly upon the vividness of these intuitions ; for no amount of æsthetic doctrine or of moral science can supply the want of vivid intuitions in respect to these ideal spheres of reality. Science and doctrine may give us the rules of criticism, and teach us to apply them ; but they cannot give that creative and impulsive power which belongs peculiarly to the intuitive region of our mental nature.

Whilst giving its due place, however, and assigning its due advantage to intuitive knowledge, we must not forget the great superiority of logical knowledge in the extent of its application, and in its power to create system and science. It is by this knowledge that we are introduced into the region of law, that we are enabled to see the remote connexions of things and events, that we can couple together causes and effects, and finally reap all the rich harvest of practical advantages which a scientific knowledge of nature and her laws have brought in its train.

Comparing these two kinds of knowledge, in reference both to their logical and chronological priority, the whole teaching of psychology tends to show us that the intuitive form is both the antecedent and the basis of the logical. Chronologically, perceptive knowledge comes first, inasmuch as the perceptive faculties are developed prior to all the other intellectual powers. We appreciate truth in its direct and concrete form, through the immediate action of the senses, long before we can at all apprehend it in the general and the abstract. But our perceptive knowledge is not only prior to all other in point of time, it is also the material ground and basis of every possible generalization or abstraction. This is a truth by no means universally conceded. It has been maintained over and over again that knowledge, in the proper

sense of the word, can only exist within the region of generalization, while the particular is only a temporary phenomenon, which cannot be called knowledge at all. This doctrine rests upon a confusion between truth as related to certitude, and truth as related to what is fixed and eternal. Wherever a necessary belief exists, which can force our own assent, and enable us to challenge the assent of all other minds, when brought into contact with the same evidence, there is truth, and there is knowledge ; not absolute truth and absolute knowledge indeed, but that which must be ever held as truth and knowledge relatively to man in his present position and circumstances in the world. And this holds good of particular facts as well as of general ones. Nay, but for the certitude of particular facts, there could be no certitude in any of our generalizations. For all knowledge and all science starts from particulars, grounds itself upon their validity, and can only be maintained as true so far as the facts out of which it is generalized are capable of verification. This is the teaching which the inductive philosophy has established by a thousand examples.

We might have viewed knowledge still further, according to the nature and amount of its certitude, but certitude does not admit of any definite classification ; and therefore we shall consider this point as a part of the general question of the relativity and limitation of human knowledge generally.

CHAPTER IV.

LIMITS OF HUMAN KNOWLEDGE.

ALL thinking, from its most primitive to its most developed form, takes place in accordance with the great fundamental laws of recognition and distinction. To think a thing is to define it, to mark it off, to say what it agrees with and what it is distinguished from ; what it is like, and what it is unlike. Where no comparison and no distinction are possible, there can be no thought. This is virtually the doctrine which has now become so well known and so generally accepted under the designation of the *relativity* of human knowledge. It is not necessary for us now to go into the detailed proof of this doctrine, as it follows naturally from the whole of our previous psychological analysis, and has been amply illustrated by many other writers.*

Absolute knowledge, according to this view, is impossible, since we can know anything only in proportion as it becomes a part of our own consciousness, and that consciousness is limited at once by the very nature of the object, which can only be known phenomenally, and by the finite powers of the subject. Let us see, then, in what precise respects our knowledge is necessarily limited, and what bounds we can set to its possible development.

* See particularly Sir W. Hamilton's *Discussions*, Appendix 1 ; also Mansel *On the Limits of Religious Thought* ; and Herbert Spencer's *System of Philosophy*, Part 1.

First, our knowledge is limited as to its quality. Let us take the simplest case as an example, that of the external world ; and let us inquire on what it is that our knowledge of it depends. Here are external objects around us, possessing certain powers and attributes. These objects affect our bodily organization,—the nervous system is stimulated in some unknown manner by them—and in this way the knowledge of their various attributes is conveyed to the mind. This knowledge, we see at once, must be conditioned by the precise relation which the human soul and the world of nature bear to each other. The effect which any object produces varies entirely according to the particular sense affected by it. That which, in connexion with one sense, produces vision, when brought into contact with another, produces sound, and, with a third, feeling. What we actually perceive, therefore, in every case, is not the thing itself, nor its attributes absolutely considered, but simply the conscious phenomena produced by the conjoint operation of the subject and the object—the soul and the world. It is impossible ever to affirm that the phenomena actually perceived are the exact copy of the thing, absolutely considered ; or that, had we other senses, the result would not be different. We are wholly shut up to one conclusion, viz., that, according to the present structure of the human faculties, particular changes in nature will produce particular changes in the consciousness.

Neither is our knowledge of mind more decidedly raised above this relative point of view than is that of nature. For of the essence of mind we have no consciousness at all ; our knowledge of it is limited to its various affections. But these affections are produced by circumstances, chiefly those belonging to the external world. So that, here again, we can only know, respecting the mind itself, that which results from the mutual action and reaction of its various faculties and susceptibilities, on the one hand, and the

environment in which it is placed on the other. Qualitatively, then, our knowledge is purely relative, being limited by the peculiar mode in which the world affects the consciousness.

But, secondly, our knowledge is also limited in regard to quantity. If knowledge be possible only where we can define and draw distinctions, then, when we get beyond the region of distinctions, it must wholly cease. This is the case with matter, essentially considered. What we mean by matter is that which remains of natural objects when all their various attributes are abstracted. But that which has no attributes is undistinguishable ; it cannot be differentiated or defined ; and, therefore, it cannot be brought within the conditions of thought at all. We may speculate as to the nature of material existence ; we may set up an atomic, a dynamical, or a spiritualistic theory on the subject ; but we can have no positive knowledge of it, inasmuch as it lies beyond the region of all distinctions. Of the essence of the soul we know no more than we do of matter. Where the subject and the object absolutely coincide, all knowledge ceases. The duality of consciousness is a necessary condition of its existence ; in other words, there must always be a subject which knows, and an object which is known. We may, indeed, separate the affections of the soul from the soul itself, and make them a distinct object of knowledge ; but where would be the distinction of subject and object if the soul were required to know itself, not phenomenally but essentially ? It is evident that the two factors would fall together ; and thus, distinction being blotted out, all knowledge would necessarily cease. The same argument holds good in relation to the absolute and infinite Being. That which is absolute and infinite can have no relation in thought to what is limited and finite. The two terms are wholly incomparable. To distinguish it from anything else would be to destroy the very idea of absoluteness and infinity. Hence the Absolute does

not come within the conditions of human knowledge any more than the essence of the soul and the world. To sum up these various conclusions briefly, we may express the general truth they involve thus:—That human knowledge can only be occupied with the phenomenal, and ceases altogether in presence of the simply real or essential.

The case is the same in regard to all ultimate scientific ideas. Time, space, power, cause, motion, are all incomprehensible realities; for, as thought can reach only as far as distinctions can be drawn, the power of comprehending these realities ceases as soon as we arrive at that ultimate limit, where all differences disappear, and the ideas stand alone as representative of existences which can only be compared with themselves. All the above ideas we must regard as being truly representative of realities; yet they are all realities which cannot be known—nay, which so far resist analysis, that they involve us in palpable contradictions or antinomies the moment we begin to treat them as ordinary logical concepts.

And yet, notwithstanding this, we cannot resist the impulse under which we are laid of regarding all such ideas as matter, mind, time, space, power, and motion, as marking real objective existences. The fact that we cannot comprehend, or explain, or analyze them, or know anything whatever of their real nature, does not involve the result that they are to be regarded as mere negative terms.

If, then, it be clearly established, 1st, that absolute knowledge is possible; 2ndly, that, in regard to quality, all human knowledge is conditioned by our limited powers of sense and reason; and, 3rdly, that, in regard to quantity, it can never transcend the region of the phenomenal and the relative; then several corollaries may be drawn, which it is of some importance for us to understand.

1. It will follow that our knowledge must be divided into many different branches, each resting on its own separate

series of facts, and each claiming its own particular measure of certitude. For, as our knowledge is not absolutely one, but manifold, it must necessarily divide itself into various departments, according to the nature of the facts on which it rests. Were all knowledge deducible from one fundamental and self-evident principle, it would be perfect, which we have shown it can never be as to quantity or quality.

We can conclude,

2. That, as science progresses, these various branches will have a tendency to merge into wider generalizations, but that they will never reach the point where all knowledge can be gathered up and grasped from one single principle ; for, if this were the case, our knowledge, so far as it goes, would be absolute, which we have already seen to be impossible.

3. It follows from the necessary relativity and limitation of human knowledge, that there will be an infinite gradation in the amount of certitude which we can attach to the various portions and various branches into which it is divided ; for, as our knowledge is qualitatively limited, it can never be raised wholly above the possibility of error. Certitude, as we showed, is always relative, not absolute—that is, relative to the character and extent of our knowing faculties ; and to a relative or limited certitude there must always be attached various degrees of completeness or intensity.

Of the two classes into which all knowledge may be divided, viz., direct and indirect, the former possesses naturally a higher degree of certainty than the latter. It is not all direct knowledge, however, which possesses the highest degree of certitude. Some of our perceptions are much more clear and distinct than others. We cannot have the same definite sense-appreciation of a vapour that we can of a solid, nor of an irregular object like a mountain or a stream which we can of a regular object such as a cube or sphere. The mental operations, therefore, which are based upon the former will not have the same definiteness and certainty as

those which are based upon the latter. The degree of certitude we possess in respect to the direct knowledge of an object will be measured by the impossibility there is of thinking of it otherwise than it presents itself at once to our view ; and the highest degree will only exist, 1st, where the object itself is perfectly distinct and definite ; 2ndly, when it appears to all other beholders exactly in the same way as it does to ourselves ; and, 3rdly, where our perception can pass over into a definite concept, and maintain an objective as well as a subjective validity as an element of human knowledge. These conditions are especially fulfilled in the case of distinct geometrical forms, or anything whatever which possesses definite, quantitative proportions ; and it is here accordingly that the highest degree of direct certitude can be said to exist.

With regard to indirect knowledge, the highest conditions of certitude are only fulfilled, 1st, where the immediate intuitions from which it is originally derived are perfectly well defined ; 2ndly, where the process of proof is so clear and convincing, that no one who goes step by step through it can withhold his assent ; and, 3rdly, where the result does not contradict other facts and experiences which we know to be true.*

We see from this why it is that so high a degree of certitude is always attributed to mathematical processes. The perfect distinctness of the primary intuitions, and the rigid accuracy of the quantitative reasoning here employed, both give us an unexceptionable guarantee for the certainty of the results. For the same reason it is that physical science always strives above all things to reduce the matter of which it treats to measurable proportions. So soon as this is the case, half the indistinctness both in the intuitions and processes of reasoning disappears, and the certitude attained

* See Ulric, *Glauben und Wissen*, chap. 5.

comes nearer and nearer to that which we possess in the case of a mathematical proof.

It may happen that we have strong grounds for holding a thing to be true ourselves, but that these grounds are of such a nature that we cannot communicate them to other minds. We may have, in other words, a strong subjective certitude of a fact or reality, but possess no objective grounds on which we can maintain it as a truth which challenges the assent of all other intellects. In this case knowledge passes over to faith. For faith is simply a subjective certitude, and, however strong it may be to our own minds, cannot present grounds which are naturally calculated to compel the assent of others. To elucidate this last point, however, more fully, we shall require to devote a separate chapter to its discussion.

CHAPTER V.

NATURAL BELIEF, AND PERSONAL CONVICTION. .

WE are now discussing the various attitudes which the human reason can take as regards the appreciation of real objective truth. We have already considered the most important of these attitudes,—I mean the process of knowing, the result of which process is knowledge. Before proceeding any further, it is important that we should keep the precise and specific idea which is now attached to the term knowledge clearly before our view. Let us recapitulate the principal points.

By knowledge we mean—the apprehension of a truth which rests upon a necessity of our intellectual nature—the grounds of which are wholly objective—the validity of which we can make obvious and certain to other minds—and the denial of which would involve in it either an impossibility or an absurdity. The certainty we attach to our knowledge, indeed, is not always the same, *i.e.*, it is not always equally direct, nor brought home to us by the same amount of evidence; but to whatever extent the evidence reaches, it is objective in its character, and can be laid clearly, with all its natural force, before every other mind that will take the trouble to follow up the process of proof.

The main thing we have here to notice is,—that knowledge in the strict and specific sense of the word does not

depend, in any degree, upon our will or personality. There is a thread of necessity running through the whole. The truth involved is forced upon us even in opposition to our hopes, desires, or mental sympathies; and can be equally forced upon other minds, owing to the objective nature of the evidence. It is in this particular point, as we shall soon see, in which knowledge differs from all the other modes in which truth can be apprehended by the human reason.

. Taking the idea of knowledge in this restricted sense, we soon become conscious how very limited is the amount of truth which we can be said, strictly speaking, to know. Putting aside the ordinary and passing facts which the senses bring home to us, *i.e.*, the particular knowledge of daily life, the truths of a general character which have been established on the evidence implied by positive knowledge do not reach very far. They are limited to a few of the results which the most perfect of the sciences have elicited; and even in the case of these they do not go down to the ultimate ideas on which all such sciences rest. Though comparatively few, however, the general facts which we may be said to know (such as the earth's revolution and similar astronomical truths, the fundamental principles of statics and mechanics, the laws of gravitation, of hydrostatic pressure, of chemical affinities, and, still more, the facts and formulæ of mathematical science) are of the most transcendent importance to the practical welfare of mankind. They form a body of fixed truth which cannot be shaken; which stands firm amidst every speculation of the human intellect; and which, in the long run, breaks down every dogma, philosophical, ethical, or religious, which stands in the slightest degree opposed to it.

We may now proceed to the next principal form, which the reason assumes in regard to objective truth, and which we term natural belief. The term belief has been greatly abused by philosophical writers. Instead of having any

strict and special idea attached to it, it has been employed for a great many different states of mind, and those widely enough separated from each other. It has often been employed, for example, to express direct and immediate knowledge—probably because we can render no reason for such knowledge beyond that of an intellectual necessity. Belief in contradistinction to knowledge always ought to indicate some case in which the objective evidence is incomplete, and of which the opposite does not imply either impossibility or absurdity. We cannot, accordingly, in propriety of language, say, “I believe I have a pen in my hand, and a sheet of paper before me;” or, I believe that two and two make four;” or “I believe in my own existence, or the law of gravitation.” These are things which we know; the evidence of them is direct and indubitable; and no one who has the opportunity can say that he does not know them on pain of being considered an imbecile.

In the case even of our natural beliefs, this fulness of objective evidence does not exist; on the contrary, the conclusion we come to can be resisted, until it is at length determined by a voluntary mental decision, or, at any rate, a decision in which the personality of the believer has something to do in deciding between conflicting claims. We have used the adjective natural in connexion with the word belief, to indicate that state of rational intelligence which comes next of all to knowledge, which has the largest amount of objective evidence, and the smallest amount of personal determination compatible with belief at all; which forms, in a word, the transition point between positive knowledge and personal conviction.

A very large portion of accepted truth rests upon this basis, more than is perhaps generally imagined. All ultimate scientific ideas, for example, come under the denomination of natural beliefs; as lying beyond the region of logical

analysis, and as having no indisputable objective grounds. We cannot be said to know anything of time, or space, or matter, or force ; we cannot point to any objective necessity which compels us to admit their real existence. So far from that, time and space have often been regarded as mere subjective forms, while matter is denied by the idealist, and force or causation by the sensationalist. Bring any of these ideas into the arena of logical speculation, and we soon find that they do not indicate knowledge at all. And yet it is natural that we should believe in them as real existences ; indeed the whole tendency of our reason leads us to do so ; and, although we may argue them down with a show of plausibility, yet the mind turns to them again and again as being practical realities, which it can hardly fail to admit.

But our natural beliefs are not confined to these ultimate scientific ideas ; there are a great many convictions in which our knowledge is very imperfect, and which we are naturally, therefore, induced to complete by a belief which extends further than strict knowledge will carry us. This is, in fact, psychologically considered, the exact difference between a law of nature and a theory. A law of nature is something which we can know ; for until we know it, it cannot be pronounced to be a law at all. It is true we do not know anything of the unseen force by which it operates ; but so far as the term law goes, a real, positive, unquestionable knowledge does exist, as in the case of those great scientific facts before mentioned. A theory, however, means an attempt which we make to complete our knowledge by supplying the links that are wanting. The evidence for it may be indefinitely strong ; but, so long as there is some portion of the matter, the objective grounds of which we are unable to point out, there must be something which rests upon subjective evidence only, and which consequently, is determined by a free mental act of our own.

If, now, the objective grounds become stronger and

stronger, it is possible that what was once a natural belief may cross the boundary, and take its place amongst facts which we may be said to know. Some of the now established laws of nature were once mere theories: and it is possible that, with regard to some of the theories now existing, the missing links may be at some time discovered, so that they may cease to be theories any longer.

On the contrary, in proportion as the objective grounds become weaker, belief, in the sense now explained, tends to sink into mere opinion; a mental attitude in which we are unable to decide between conflicting grounds, although we tend to the one side more than to the other. When there is a perfect balance of evidence, and no subjective tendency to help us to a decision, the mental state is that which we designate doubt.

It may be, however, that, while the objective grounds remain wholly uncertain, the subjective tendency to decide in one particular way becomes stronger and stronger. In this case we are led to a personal conviction of the truth involved, which, notwithstanding the defect of external grounds, will sometimes rise to a degree of certitude only inferior to positive knowledge itself.

The part which personal conviction plays in human life is so prodigious, that it demands at our hands careful consideration and analysis. The basis out of which all personal convictions spring is human individuality. Were each human mind simply an instrument for working intellectual problems, and constrained to act entirely according to certain fixed laws of intelligence, then there would necessarily be perfect uniformity of intellectual results, wherever the same data were presented. But this is far from being the case. Every human mind presents an individuality for itself, having its own instincts, tendencies, propensities, and bias. To this is added the force of habit, created by particular circumstances, associations, and modes of life. These influences,

taken together, form what is called character, and out of the individual character of each person spring the particular convictions of which he is the subject. By a personal conviction, accordingly, we mean that state of mind in which the predominant character of the individual is engaged in favour of any idea or system of ideas—one which so coheres, and becomes so fused, if we may so say, with that character, that the confidence felt in the truth of it appears to be guaranteed by the whole bent and tendency of the personality of the subject.

The strength of such personal convictions is not much altered by the objective evidence being stronger or weaker. Independent of any personal bias, the evidence of a fact may be so abundant that, dispassionately viewed, it might be considered to rest on a natural belief, or the evidence, again, may be so slender that without some strong inward impulse, nothing but doubt could possibly result; and yet the personal conviction may be as great in the one case as in the other. In cases of strong personal conviction, in fact, outward evidences go for very little, the subjective impulse being always the main determining principle.

The cases are innumerable in which this peculiar psychological phenomenon is exhibited; those cases relating, for the most part, to questions where exact science cannot be applied, but which touch largely upon the great body of human interests. Thus, in moral, in political, in social, and in religious questions, we generally find that every one's peculiar convictions are formed mainly by the whole bent and tendency of his character. Neither is it a matter to be deplored that such should be the case. In these departments, the positive objective evidences which we can bring forward for any particular position, are naturally slender; on the contrary, the impulses to this side or the other are equally strong; so that those who trust their impulses, and regard them as tending to the right, naturally cling to the

strength of the subjective evidence rather than to the weakness of the objective. If it be rejoined that the impulses even of good men are often conflicting one with another, all we can say is that, as knowledge is here impossible, the tendencies of human belief may be rather benefited than otherwise by the variety of opinions ; that even extremes on the one side are usually counteracted by those on the other ; and that human progress can only take place, in cases where positive science is not applicable, by the action and reaction of conflicting opinions. In this fact we find a rational basis for the principle of toleration. Intolerance is grounded in ignorance of the fundamental difference which obtains between positive knowledge and personal conviction, and in the consequent want of ability to separate the one sphere from the other.

Now that we have gained a precise idea of the three chief attitudes of the human reason, in relation to objective truth —I mean knowledge, natural belief, and personal conviction —we possess the data for furnishing some psychological exposition of that most potent element in human life and character,—I mean religious faith.

That the entire objective material of religious faith lies out of the region of knowledge, in the strict sense of the term, is obvious. The very term "faith," indeed, at once implies this. The chief object of religious faith is a Supreme Being —the great First Cause and Creator of all things. The Infinite, however, as we have shown, cannot be grasped by the finite as an element of knowledge, any more than the objects indicated by all other ultimate intellectual ideas. Thus, we do not know the real objective existence of space, or matter, or force : and, for the same reason, and owing to the same limitation of our faculties, we do not possess any positive knowledge of an infinite cause. In other words, we cannot rest our conviction of any of these things, on purely objective grounds, without some admixture of free mental determination.

Added to this, we cannot take up any of these ultimate intellectual ideas, and reason upon them logically, without being involved in antinomies and contradictions—which is the surest proof that the material itself is not one which can at all adapt itself to human knowledge and the great laws of positive thought.

We are obliged, accordingly, to sink down to the 'next stage of certitude, that which is afforded by natural belief. And here, however evident it is even at first sight, that all religious faith cannot possibly come under the category of a natural belief, yet we may perhaps find that there is something common to all the different forms of religious conviction which does rest upon it—something, that is, which presses itself upon our acceptance with the same force and reality as does the existence of matter, power, and the like. That which is common to every possible form of religion, nay, to every possible mode in which we think about the problem of the universe, is the existence of a First Cause. Logically, this idea may be beset with contradictions (as Kant, indeed, has shown that it is), but yet it is one of those natural and irrepressible objects of belief to which the human mind turns, as being necessary to complete our limited knowledge of the world around us.

“There is no such thing,” says Professor Ulrici, “as Atheism, except for thoughtlessness and frivolity. For we cannot choose but ask after the ground of that which is, according to the principle of causality; and we cannot cease from this inquiry until we think that we have discovered the universal nexus of causation, the groundwork of all existence. The modern Materialist, who holds the ultimate atoms, with their so-called powers, to be eternal and imperishable, and ascribes the formation of every thing, as also of the universal whole, to movements caused by attraction and repulsion, although he may boast of his Atheism, yet really believes in a Divine power—for that

happy chance or that restless motion to which he ascribes all things is his God ; the Positivist, to whom nature is all in all—a united whole possessing in itself the cause of its own order and harmony, whether in the form of an original instinct, or a plastic power, or an unconscious soul ever developing itself as vital force or as blindly operating reason : the Negro, Caffre, Hottentot, Chinese, Indian, Egyptian, Greek, who separate the universe into different portions, and attribute the causal power in each to a multiplicity of agents ; the Fatalist, who makes an unknown force govern the whole life and destiny of men by a blind and arbitrary caprice ; the Philosopher, who hypostatizes the idea of the Absolute, whether under the conception of being, or universal soul, or objective reason, and makes it the ground of all things ; nay, even the Sceptic, who doubts, and asks which of all the different views is the right, and must ever, in doing so, acknowledge that a right one exists ; —all these have A GOD in whom they believe, however differently they may represent Him, or however little they may be conscious of their own faith, and the ground on which it rests."

As, therefore, there is in the human mind a natural belief in a First Cause, so we may say that there is such a thing as natural religion,—a religion which in the depth of its conviction, and the definiteness of its object, extends only as far as this natural belief, based on the universal law of causality, will carry us. We need not say, however, that natural religion in this sense goes a very little way to account for and explain the phenomena of religious faith, as we meet with it ordinarily around us.

Religious faith, as we see it in daily operation, does not certainly assume the aspect of a natural belief. It is something far more specific, and far less uniform. On the other hand, in the individuality of its nature, the strength of its impulses, and the endless variation of its types, it comes

altogether under the idea of a personal conviction. The direct proof of this lies very near. When we consider the difficulty there is in establishing purely objective evidences for any system of religion whatever ; when we consider how few there are of its confessors who can possibly investigate these evidences, or even know in what they consist ; when we consider, still further, that the strength of conviction as to his faith is not in the least degree proportional to the amount of study which any one devotes to the objective grounds on which it rests, but seems, if anything, rather in favour of those who have never investigated them at all ; when we consider, lastly, that the same strength of conviction appears amongst the followers of numerous contradictory systems, the grounds of which lie open to the appreciation of all alike, we cannot possibly come to any other conclusion than that religious faith in the specific sense is predominantly a personal conviction—one, too, in which scarcely any appreciable amount of objective evidence in the great majority of cases is mixed up. We do not say that religious faith is necessarily of this purely personal nature only, but that it is usually so within the range of our actual psychological experience. A religion may have any assignable amount of objective grounds, and come indefinitely near to actual knowledge ; but, as a matter of fact, every religion does exist in most minds as a purely personal conviction, and exerts its influences on the great mass of its votaries, without any consideration whatever of its external evidences.

The great peculiarity which the case of religious faith presents is the deep and strong belief it carries with it of the reality of its objects, despite the undeniable truth of its being almost universally a purely personal matter, without any more than the very slenderest admixture of objective evidence. I say without any more than the slenderest objective evidence, because it is now admitted, even by the most

positive of theologians, that the moral evidences of Christianity are those on which the greatest stress must be laid ; and that, were these left out of the account, the amount of certitude attached to the purely historical grounds, without any moral or subjective evidences to uphold them, must be of a very indeterminate character. Why is it, then, that we should attach such a high degree of certainty to this conviction ? and on what principle do we so assuredly attribute an objective value to an idea, or a system of ideas, which rests, in the case of nearly every individual, entirely on subjective grounds ?

The first thing we have to notice in reply to this question is,—that the import of the faith which religion inspires is of such transcendent magnitude that we cannot persuade ourselves of the possibility of its being a mere subjective delusion. We must admit that some truth of the kind that religion offers is morally necessary for our peace, our hope, and highest happiness as men. Hence our whole personality throws itself into the religious ideas, and insists upon some truth existing which shall give meaning and completeness to the problem of human destiny.

Again, secondly, almost all men have, in connexion with religious faith, the strongest feeling that some such objects as those involved in it are necessary to give satisfaction and completeness to our whole nature. It is the feeling of necessity, attaching itself to the sensation of external objects, that presses the conviction of their real existence upon the mind. But sensation is closely allied to feeling. The one relates, it is true, to the outer world, the other to the inner world ; but, in the form of their existence and manifestation, there is a close similarity between them. They both come upon us spontaneously, press themselves involuntarily upon our consciousness, and determine our mental condition for the moment, without any—or, at least, with but very little—control of the will. Hence anything which seems to be

necessarily involved, either in sensation or feeling, as an objective reality, makes a strong claim on our belief. In the case of sensation, indeed, it gives rise to actual knowledge, because we can bring the matter to the test of other people's experience, and point to the objective grounds of evidence, independently of the sensation which primarily revealed it. In the case of feeling we cannot do this, inasmuch as it is wholly subjective; still, the involuntary character of the feelings gives the basis, at any rate, for a strong BELIEF that the objective truth to which they testify is a reality, or contains, at least, the groundwork of a reality behind it. Were it not so, why should the feeling be so strong? or whence could it derive its character? We are not conscious of any mental process connected with the powers of conception or imagination, by which the strong conviction involved in the religious feelings are created subjectively. We can hardly forbear the conclusion, therefore, that there is some reality to which they correspond. And this it is which virtually solves the whole psychological difficulty of the case,—that, namely, of explaining why a purely personal conviction should testify so stringently to a real objective existence, and bring our subjective certitude to so high a pitch of realization. The outward senses force upon us the existence of external things; and as we are enabled to test their validity by the experience of others as well as ourselves, we term the result positive knowledge. The internal feelings force upon us, with almost equal strength, the existence of a great First Cause; but, as their validity cannot be tested by any objective experience at all, we term the result religious faith.

Of course, our experience in life tends greatly to diminish the conviction, that the precise mode in which we apprehend religious subjects has any great evidence of being correct over and above the particular modes in which many other minds view them. We learn gradually to be less positive

in regard to details, and learn toleration for opinions, which rest upon just the same evidence to others that our own do to ourselves. But with all this, it still remains a conviction, which nothing can shake in every strongly-religious mind, that the truth apparently involved in the religious feelings has a basis in reality ; and that it would do violence to our very nature to suppose that such a testimony should exist within us merely to create a beneficial delusion.

The results of our analysis of Reason may now, in fine, be summed up in a few words. By reason, we mean the power of co-ordinating all the other intellectual processes, so as to give rise to human convictions, and enable us to adapt ourselves to the universe in which we live. Of these convictions, the first and most important are those which rest upon indubitable objective grounds, and which, therefore, we term knowledge “par excellence.” Those convictions which rest upon universal consent, but which can produce no objective proofs, we term natural beliefs. While, lastly, those which rest on the subjective impulses and promptings of our individual nature, are to be considered only in the light of personal convictions. Evidence of the first kind is in every way irresistible, any opposite convictions being either impossible or absurd ; that of the second kind is open to speculative doubts, but is always practically unquestioned ; that of the third kind may carry any amount of force to the individual himself, but can never be rendered valid to any other mind differently constituted to his own.

PART VI.

DEVELOPMENT OF THE WILL.

CHAPTER I.

PRELIMINARY EXPLANATIONS.

IN commencing this new division of Mental Philosophy, we must retrace our steps back to the point of view which we gained in discussing the primordial forms of mental activity.

Every human being, we have seen, comes into the world with a distinct individuality impressed upon him, but without any actually existing innate ideas. He is placed at birth in the midst of a natural system of things, perfectly adapted to his own nature and organization. The mutual action and reaction which take place between the soul and the world through the medium of the nervous system furnish him with the primary material of all his ideas. Thus, there are two, and only two, sources from which human knowledge can possibly be derived — namely, self-consciousness and world-consciousness : the inner and the outer sense.

So much for the matter of human knowledge. With regard, next, to the form, this is furnished entirely by the great twofold law of all our mental activity. Neither self-consciousness nor world-consciousness—neither the inner nor the outer sense—could give us anything approaching to a perception or an idea, without the operation of mind upon the phenomenon presented. The first presentation of the material of our ideas is the signal for the great law of intelligence to come into operation ; and we have shown in detail how, by

the processes of combining and separating, by the aggregation of similar residua, and the distinction of dissimilar, all our powers of perception, of ideation, of conception, of abstraction, generalization, and reasoning, are one after the other formed and developed. We have also surmised that this law of mind-formation is but the carrying out on a higher sphere of the process which physiology has shown to be the active principle of our physical organization; and that, just as the organs of the body are formed by the aggregation of cells, so the faculties of the mind are formed by the aggregation of residua—both the one and the other, however, starting at first with a definite individuality, and with the possession of primordial powers and susceptibilities corresponding with the elements of nature in the midst of which we are placed. Thus, we have one single principle as the universal basis of life, whether that of the body or that of the soul.

Now, the will does not, of course, express any real thing distinct from the mind and its operations. It is merely the mind itself viewed in relation to effort and action, instead of intelligence and reason. The will, therefore, is really involved in every mental act, even though the aim of that act be purely intellectual. We may find a very simple analogy by which to comprehend the relation between will and intelligence if we appeal to nature around us. In every plant that grows, we can distinguish the form of the plant (the idea, if I may so say, to which it conforms) from the vital force by which it unfolds itself. On the one side, we see a certain type; on the other side, we see the effort of the plant to realize that type. Carrying over this analogy to man, we see in every human being a given type of individuality, and a constant effort to unfold it. The only difference is, that as in man we have a higher order of existence ascending progressively to consciousness, perception, and reason, so, also, we have in the corresponding line of effort a series of stages rising up from a blind impulse to spontaneity and freedom. What reason is

on the side of the intellect, freedom is on the side of the will. Reason is enlightened intelligence, and will is self-regulated action. If, then, the will be merely the mind itself (the mind with which we have all along been occupied), only viewed on another side of its nature and activity, then the very same laws ought to regulate it here also; and the growth of volitional power ought to proceed in the same way, and by the same laws, as that of the intellect.

Just as we have traced the development of the understanding and reason through a succession of stages, beginning with the primordial instincts, and rising up successively to more and more complicated forms of intelligence; so ought we now to trace the development of the will, through a succession of similar steps, from the first instinctive efforts of our nature up to enlightened and self-regulated activity. Moreover, we should naturally look for the same great fundamental laws to regulate the growth of the will as we have seen regulating the growth of the intellect—I mean the laws of combination and separation. The difference in the application of these laws, however, will be this:—that, whereas we had before to do with the combination and separation of ideas, we have now to do with the composition and resolution of mental forces. Thus, we are brought into a sphere of mental dynamics, the primordial impulse of which, indeed, like that of the universe, is transcendental (*i.e.*, lying beyond the possible reach of human experience), but of which the real manifestations and developments are quite capable of being analyzed and tabulated.

We shall find, in proceeding to do this, that every mental impulse, as well as every idea, is imperishable; that it leaves its residua behind it; that these volitional residua follow the same laws of action and reaction as those of our perceptions and ideas; that their combination, like the composition of forces, gives additional power in the same direction; and that the resolution of them may direct the mental force from one

to various different points. Lastly, we shall find that, as intellectual force becomes more and more explicit as it proceeds onwards, so volitional force tends to extricate itself more and more from the influence of circumstances, and to assume the great attribute of freedom. With this brief preliminary explanation, we shall proceed next to the more detailed analysis of the subject.

CHAPTER II.

ON THE MOTOR MECHANISM IN RELATION TO THE WILL.

THE simplest and more primitive class of movements which we are able to detect in connexion with the human frame are those which are called reflex. By reflex movement we mean that property which any of the nervous centres possess of responding to an impulse affecting them. Such a response does not require to be accompanied by consciousness, still less by volition, in the proper sense of the word. An impulse given to any part of the human body externally is propagated by the nerve or nerves affected onwards towards the centre of the nervous system. The wave of innervation, however, after a time, separates into two branches ; the one carries the impression to the seat of sensation, and awakens consciousness and feeling, the other proceeds to some of the main strands of the motor system, and produces a motor reaction, which corresponds to the impulse first given. It may be, however, that the sensational, or incident impression, never reaches the seat of consciousness, or gives any intimation of its existence to the mind ; while the motor current actually accomplishes its purpose and produces a muscular reaction, of which we, of course, can have then no direct cognizance. Such a fact appears, at first, to imply something very much approaching to mere mechanism, and yet it is not wholly so. Secondary agents, it is true, may be employed ; indeed, there is good reason to think that

electricity is active in every single case of muscular movement ; and yet every such movement may be pretty clearly shown, after all, to be initiated by vital-force, or mind-force, or some such transcendental agency, in the reality of which we believe, but which we cannot detect.

That that is the case appears quite evident from the special adaptation which many of the so-called reflex movements have to certain special purposes. For although mere mechanism may so far bear the impress of the maker's mind upon it as to subserve ends which he foresaw, yet no mere mechanism can show special teleological contrivances adapted to meet new series of events and circumstances as they arise. Again, the purely mechanical theory of reflex action is rendered quite inadmissible by the fact that the very same kind of movements may be excited by ideas quite as readily as by actual impulses from without. The thought of a sword-cut will make the muscles of the spot on which it is conceived to fall, contract ; the idea of anything nauseous will affect the muscles of the thorax, and even produce actual sickness ; laughter is a muscular affection often quite beyond the control of the will, and created by trains of thought in the mind, whether expressed or unexpressed. Gestures are the same. Indeed, our thoughts may produce reflex movements, which go on continuously until they are stayed or controlled by some other counteracting thoughts or purposes. Thus we go on walking mile after mile, even when absorbed in conversation or reverie, the action of the limbs being purely reflex all the while, and the movement going on in obedience to a general idea or purpose, without any renewed volition, or attentive consciousness on our part. Nay, even in cases where volition comes in as the primary impulse to any action, the will can only accomplish its purpose by exciting the motor mechanism to do the work required in its own way. We are wholly ignorant of the muscles we have to move in order to effect any given action, and equally

ignorant of the process by which the proper movements can be effected. All this must be left to the natural reflex agency of the motor system.

The mind and will, accordingly, stand to the motor system, not in the relation of an engineer to the machinery which he has constructed, all the wheels and contrivances of which he understands, and the working of which he can perfectly overlook; it stands to it, rather, in the relation of the engine-driver, who may understand nothing of the mechanism he sets in motion, but who may simply know that certain external movements performed will, in some way, lead to certain known results. The mechanism of the motor system holds itself quite indifferent in regard to the immediate source from which the impulse that affects it may be derived, so long as that impulse is really given.

The mind contemplates an end which it desires to accomplish, and the will, looking over all the intermediate agency, gives the signal for action. Whether we are able, however, to perform the movements by which this end is secured, is a point which can be decided only by experience. Very often, after the will has sent forth its mandate, the motor system falls short, and we fail to accomplish what the will commands. In this case no mere effort of will can bridge over the difficulty. Our only help lies in a more perfect training of the motor mechanism to this particular end. When, by such training, new facility is acquired, the power thus formed is termed the power of habit.

The power of habit is one which admits of comparatively easy analysis, and which will at the same time afford us a good example of the operation of the fundamental laws of mind within the region of voluntary activity. Reflex action, like the phenomenon of sensation, is an ultimate and indecomposable fact. The different parts of the nervous system, when brought into relation with certain natural agencies, manifest certain distinctive phenomena, which we

cannot account for, but only observe. Why it is that one set of nerves should produce sensation, and another motor reaction, we do not know, any more than we know why the optic nerves should be sensitive to luminous vibrations, and those of the ear to vibrations of the atmosphere. These are, in fact, some of the ultimate phenomena which we have to colligate and examine, but which positive science does not attempt to explain.

Just as sensations, then, lie at the basis of our intellectual life, and form primary material on which the mind first begins to work in the direction of knowledge, so do reflex actions lie at the basis of our volitional life, and form the primary facts out of which the mind first begins to work in the direction of activity. The mode, too, in which this volitional development takes place is strictly analogous with the growth of our perceptive power. Every mental experience, as we before saw, leaves its residuum behind it; and the blending of similar residua forms the chief method by which the perceptive power increases in a given direction. As this process of development goes on, we gain the power of perceiving objects, almost at a glance; the smallest intimation of their presence awakening the combined masses of residuary experience, which we have stored up in the mind, and enabling us to complete the whole image of an object, when we only see the very smallest part.

Now, if we turn to the chapter on the Nature of Residua (Part II. chap. iv.), we find that, laying aside all theories on the question, and looking merely at the facts of the case, there remains, after every mental experience and every mental act, a tendency to recur whenever the slightest suggestion in the same direction may take place. This tendency to recur forms the very essence of what we mean by residua, *i.e.*, it explains the phenomenon, as it represents itself to our actual observation, without attempting to assign the cause. Putting, then, together these two things—1st,

the fact of reflex action, or the capacity which certain parts of the nervous system have to respond to an impulse in exciting muscular motion ; and 2ndly, the law by which every mental fact once experienced tends, at every favourable opportunity, to recur—we have the whole principle on which to account for the rise and formation of active habits.

Habit is to the general power of voluntary activity very much the same thing as perception is, in the relation to the general power of intelligence. Just as we learn to perceive instinctively, by the accumulation and complete blending of innumerable mental residua, so we learn to perform all the ordinary actions of life by the accumulation of volitional residua, giving an unconscious automatic direction to the motor system. The child at first has no power over the guidance and direction of its limbs in reference to any external desire or purpose which it may form. It is quite easy to watch its tentative efforts, and see it fail in grasping an object, which it appears in after life to lay hold of with a perfectly unconscious and instinctive precision. The reason is, that the motor residua are not yet formed ; the tendency for a given kind of action to recur when any particular desire is conceived has not yet been created, or, if partly created, is not sufficiently strengthened in this particular direction. Just as we must learn to perceive the most common objects—objects which we afterwards seem to know by a direct and irresistible intuition—so we must learn to do the most ordinary acts ; although when we have learned, we seem to ourselves to perform them quite instinctively. The power of habit, in fact, created in this way by the accumulation of motor residua, lies at the foundation of the entire working of our practical life.

The formation of habits, however, can be most easily traced in cases where they are learned later in life, and where any original instinctive tendencies are wholly out of the question. In this respect they stand parallel to those per-

ceptions which are ordinarily termed acquired, and which belong especially to individuals who have had the peculiar opportunities necessary for acquiring them. We might take the power of playing on a musical instrument as a very good typical example of these specially formed habits. A person perfectly acquainted with music, and understanding how every note is made on the instrument he is going to learn, tries to play some musical passage placed before him, and, as a matter of course, entirely fails. The instrument in his hands seems entirely unmanageable; he is unable to find the position of the keys while he is looking at the music before him; and his fingers cannot move over them either with the precision or rapidity which is necessary to produce the effect required. He is, in fact, exactly in the same position with regard to the instrument which every child at first is with regard to the external world. He has never made any movements specially adapted to elicit a musical effect from it; he has accordingly formed no habit, and has no motor residua stored up which can be excited to aid him in performing what is termed the mechanical part of the task. He has to fall back, consequently, at first, upon what power of muscular motion he has already acquired, and, by close voluntary attention, to spell out, as it were, every movement of the hand which is necessary to perform each musical note or phrase. When this has been done once, the first step has been taken, the first residua have been formed, and a muscular movement has been effected, which is exactly so much the more easy to reproduce, as the tendency to recurrence, even after one attempt, is somewhat greater than it was before. The subsequent steps are a mere repetition of the first one. Every repetition adds to the quantity of specialized motor power which is being accumulated, and thus, in process of time, a habit is formed, which is so strong, that the mere sight of the notes before us will excite the special nervous actions which are necessary to perform or reproduce them on

the instrument. The act thus becomes virtually reflex ; and the mind of the artist can be occupied, if need be, with other subjects, and leave it to the eye and the hand to perform the music spontaneously.

All mechanical acts are learned in this same way. In proportion as volition has to be exercised in carrying them on, in that proportion they are imperfectly performed, and then only at the expense of much labour and fatigue. In proportion, on the other hand, as the tendency to recur has become established by means of the accumulation of special motor residua, in that proportion the perfection of the workman becomes greater, while he performs his task without fatigue. A purely reflex act is accompanied with no fatigue at all, so that operations which are painful to the muscles engaged, so long as the will had to impel every movement for their performance, can, after a while, be kept up the whole day, with scarcely any sense of weariness whatever. Where the habits to be acquired are of a very delicate kind, and require peculiar rapidity of muscular motion, it is necessary that they be commenced in early life. At this period the motor mechanism has not yet acquired any very strong tendencies in any direction so that residua may be accumulated without difficulty, and made to tell with especial force upon any one particular facility which it is designed to cultivate. After a time, conflicting associations came in, antagonistic habits are formed, and as much labour has to be undergone in overcoming these as in acquiring the others. The habit, for example, of moving the fingers consentaneously is ordinarily so strong, that that individual action of them, which the expert pianist requires, can hardly ever be gained except in early life. For the same reason, habits of graceful movement should be early impressed upon children to prevent that "*gaucherie*" which the want of such early training almost always leaves behind. Where such habits are gained in early life they remain as a heritage to the motor system ever after. The mind and the

will may henceforth banish all thought and all effort regarding them. Once laid up amongst the residua ready for action, the motor mechanism will reproduce them whenever the association prompts, and thus good manners, as far as the outward expression is concerned, become a part of our unconscious spontaneity.

CHAPTER III.

INSTINCTIVE ACTIONS.

THE reflex actions, which we were considering in the last chapter, may be regarded as purely mechanical in relation to the consciousness and the will. It is true, they are guided inwardly by an intelligent principle; but then that principle, so far as it subserves these particular actions, is wholly preconscious and involuntary in its operation. The same may be said of habits when once completely formed. They usually commence in volitional acts; but, after a time, they become transferred, as we have before shown, from the voluntary to the automatic region of motor phenomena.

Now the instinctive phenomena, to which we next proceed, hold a kind of middle place between the mechanical and the voluntary form of human activity. On the one hand; they are not mere blind responses to an impulse, a sensation, an emotion, or an idea. Nor, on the other hand, do they imply activity prompted by a distinctly realized purpose or determination. The power of the will is not indeed entirely suspended, as is the case in the reflex phenomena; it exercises still a kind of general control, sufficient to modify very materially the course of action which is implied by any particular instinct. Neither, speaking in relation to intelligence, are the instinctive actions wholly blind, and unconscious of a purpose. Spontaneity may indeed be much more characteristic of them than any intelligent reflective

adaptation to an end ; but, still so far as human instincts are concerned, the perception of a purpose is not wholly wanting. Whether the bird, for instance, in building its nest looks forward to its young brood we cannot say, because we are wholly unable to realize what is passing in its consciousness ; but in man we can hardly separate the parental instincts from the ends which they are directly intended to subserve.

To explain the exact character of the instinctive actions we must refer to a region of mental phenomena, into which we have not, in any detail, yet entered, I mean the feelings ; phenomena, which every one, however, understands, although he may not have regarded them from a philosophical point of view. Every instinctive act, then, we find by due observation, to be grounded in some natural feeling. This it is to which it owes its origin, and which stamps upon it its whole distinctive character. Thus the feeling of hunger and thirst gives rise to the instinctive appetency for food. The parental feeling gives rise to the instinctive impulse towards the care and preservation of the child ; and so with all the other natural instincts.

As the nature and psychology of the feelings have yet to be considered all we have to do just at present in analyzing the instinctive actions, according to this view of the case, is to show how they spring and develop themselves out of those special feelings in which they are primarily cradled. To do this, we shall only have to apply the law of similarity, and then to trace the *growth* of the instincts in the same way as we have traced that of all the other faculties.

Feelings are of very various kinds. Some are intensely pleasurable, others intensely painful. Others, again, are neither the one nor the other, but may tend either to the agreeable or the disagreeable, according to circumstances. One of the most common of all feelings is the feeling of want, or uneasiness—a craving for something which is not allayed till the want is supplied. Thus when the stomach is long

without food we have a physical feeling of want,—a craving which suitable aliment alone will satisfy. This feeling is not synonymous with the instinct which prompts us to seek food. The first effect of it is to produce restlessness and disquietude. The infant in its mother's arms, when in want of food, becomes fretful ; to quiet its restlessness it is moved to the breast, and soon finds the craving supplied. Having thus once, twice, and then perhaps several times more, experienced relief to the feeling of craving and disquietude, which it repeatedly experiences, a tendency to seek its supply of food in this particular way is very soon superinduced—so that the impulse to act becomes intimately associated with the feeling of want. This impulse to act is what we term the instinct, properly so called ; and though its first starting-point may be purely natural [*i.e.*, not acquired], yet the whole of its subsequent development and specialization takes place in accordance with the law, by virtue of which the repetition of any action increases, and intensifies the tendency to it for the future.

The sexual instinct is formed and developed by the same process. The sexual feeling is one which lies deeply planted in our nature ; but this feeling does not necessarily involve from the first any definite instinctive action designed for its satisfaction. Perfectly pure-minded persons, whose thoughts have been well directed, and whose imaginations have not been stimulated by books or conversation bearing upon these topics, do not ordinarily show any decided tendency to cause the mere feeling to pass over into action. The feeling is there, but the instinct has not yet been drawn out of it. In proportion, on the other hand, as the mind is led to dwell upon the means of satisfaction will the instinct assume a special and active form.

As man was intended to be guided by the higher gift of reason, in the full sense of that word, the instinctive acts proper to him are naturally very limited. Those, too, which

he does possess are not of a striking character, but relate, for the most part, to those elementary and almost mechanical processes which are necessary for the direct well-being of the individual, or the continuance of the species. In the lower animals, on the other hand, we find a much wider scope for observation upon the nature and variety of instinctive actions. Whether we regard the habits of birds, beasts, or fishes, we have presented to us in all alike a rich profusion of phenomena of this kind. In the arts they practise to obtain their food, to shun the approach of danger, to hide themselves from observation, to attack their enemies or defend themselves from them, to build their habitations, and to bring up their young to maturity, we may see, in the various tribes of animals, an inexhaustible series of instinctive actions, far exceeding in interest and curiosity all that exists in the human species of the same nature.

How, then, does our theory of the origin of instinct harmonize with these phenomena of the animal creation? Can we maintain that there, as well as in man, the instinctive acts are the growth of experience, grounded upon certain fundamental feelings? For on the possibility of reducing all instincts to this same general law of growth will depend, mainly, the strength of the evidence we have for the truth of the theory, as applied to man.

One thing, of course, we must concede to be purely natural and *a priori* in the sphere of instinct, and that is, the tendency to move the physical apparatus which every animal possesses in the way it is obviously intended to be used. All birds have the tendency to move their wings and their beak; the elephant has the tendency to put its trunk in and out; the fish, to row with its fins, and steer with its tail; the child, to swallow with its gullet, and suck with its tongue and lips. But these actions are purely mechanical, and do not, in the first instance, represent any definite adaptation to a particular purpose. Beyond this, we conceive, the force

of habit and experience comes in as a modifying principle, and adapts the primordial instinctive tendencies to more specific ends.

We see, for example, that the power of instinct in animals is, strictly speaking, educable. Animals placed in peculiar situations or climates gradually adapt themselves to them. The instinctive powers of their nature seem to expand in this or that direction according to the exigencies of the case ; and this is very much the same thing as saying that the instinct itself, beyond the first primordial and general impulse to use the organs provided, grows into this or that specialized form by means of habit and experience.

Nor is this all. We have every reason to believe that the power of specialized instincts is transmitted from one generation to another, and where the circumstances favour it, goes on increasing from age to age in intensity, and in particular adaptation to the purposes demanded. All domesticated animals, for example, were originally wild ; but, when once thoroughly tamed, the offspring, in the next generation, partake of the domesticated character by a specialized instinct. The case is the same with animals trained to particular purposes. The young pointer signals the game the very first time he takes the field ; the young watch-dog barks at the stranger without ever being taught to do so. All confirmed habits which become a part of the animal nature seem to be imparted by hereditary descent ; and thus what seems to be an original instinct may, after all, be but the accumulated growth and experience of many generations. If this view of the case be true, it fully bears out the explanation of the origin of instinct we have already given, attributing to the force of habit, experience, and circumstances, all those special acts which mark the instinctive life of the whole animal creation. It need hardly be remarked how entirely this analysis of instinct harmonizes with Mr Darwin's general theory of the origin of species.

In man there are, beside the more mechanical cases above mentioned, certain mental endowments which, in their results, exhibit all the marks of instinctive action. Thus we see some persons born with a natural artistic power, enabling them to imitate the forms of nature by a kind of inward impulse which they can hardly resist, and in performing which they have no definite object beyond the mere pleasure of the act itself. Others show the same original bent towards music, others towards mechanism, and so forth. To speak of a primordial innate instinct for art, music, or mechanical contrivance, would, of course, be absurd. If such instincts formed a part of the essence of human nature, they would be universal, and would not be confined to a select few. The truth is that instinctive tendencies, in these and many other directions, are formed sometimes in the individual by the circumstances of early life, sometimes in the family, by hereditary transmission. Of the transmission of peculiar motor habits from parent to child we have the most abundant evidence. Who has not remarked the little indefinable similarities, in the unconscious movement of the limbs and features, which exist between the father and the son? "Every man," as Mr Emerson has quaintly expressed it, "has some portion of his ancestors potted within him."

This same fact of transmissions is applicable to the intellectual and artistic instincts we have already mentioned. We can hardly say that the development of poetic genius, or of artistic power, in the form of sculpture, painting, and architecture, such as we see it among the early Greeks, and similar instinctive impulses amongst other people, are volitional phenomena. All such activities occupy that intermediate ground between our mechanical and volitional life, which we have assigned to the province of instinct; and all bear out the theory we have propounded, that, beyond the first general tendency, the whole of the specialized acts of our instinctive life have been formed either by the experi-

ence of the individual or by the transmission in the race. In both cases, the laws of the combination and blending of residua form the psychological fact on which the whole of the theory turns, and by means of which it can be scientifically explained.

CHAPTER IV.

DEVELOPMENT OF VOLITIONAL POWER.

WE have now come to the point where volitional activity may be said to begin. In the previous stages, as described in the last two chapters, we are approaching gradually nearer and nearer to this point, but do not come, strictly speaking, within the limits of it. Thus, in the primary form of reflex action, we have an exercise of motor power, which, as far as our consciousness is concerned, is purely mechanical. The extremities of the nerves are excited, and an action follows, of which we need not have any consciousness whatever. These actions, as they have nothing to do with the region of consciousness, can be placed by us, as we said, only within the category of mechanical actions.

Then, next, we have a secondary kind of reflex action, which has been sometimes termed sensori-motor. We experience a particular sensation, or a vivid idea, or a sudden emotion, and a muscular movement follows involuntarily. Here the element of consciousness exists, but there is no volitional control exerted. All such actions, accordingly, though they come one step nearer to volitional action than the purely reflex movements do, yet cannot be placed amongst those which are actually originated by the will. Then, thirdly, we have the instinctive acts, so largely developed amongst the lower animals, and exhibited, to some extent, in mankind as well. These instinctive acts do really involve

(at least, as far as man is concerned) some indefinite perception of an end to be answered. Starting from a natural feeling of pleasure or pain, they lead us, by the aid of experience, to seek the one or avoid the other; and so adapt themselves to the circumstances in which each individual is placed as to secure the desired end most readily.

1. The first of the ingredients essential to every thoroughly volitional act, is intelligence developed to a certain degree of maturity. Without such intelligence, there can be no clear appreciation of an end or purpose.

Intelligence is a condition essential to the existence of will, though it is not the measure of it.

2. Another element which is essential to every volitional act, is the power of weighing motives, and so of suspending our decision, and consequently our activity while so occupied. If a motive work upon us so forcibly (whether in the form of exciting an uncontrollable desire or raising an unconquerable aversion), that we are unable to suspend the action to which it prompts us, our will is exactly so far weakened and overcome, and we become mere instruments, obedient to the mandate of the emotions. The control of the reason over our actions really involves the power of suspending our choice, and of allowing a motive to have a greater or less degree of influence over us. Were we determined at once by strongest outward motive, without our having any power of suspense, we could not be said to exercise volition at all, but would be simply organized machines played upon by an external force, and not by any means free agents.

Were this state of balance, however, to continue, we should have realized the fable of the ass that starved between two bundles of hay, through not being able to decide which of the two it should eat from. An act of volition, therefore, implies something more. It implies,

3. The power of bringing on a decision. This power of decision may assume two forms. It may arise, first, from our

allowing the strongest out of the many motives operating upon us to determine the course of action we have to pursue; in other words, from the relaxation of our power of resistance, and from the voluntary resigning of ourselves to the strength of the motives affecting us. Just as it requires an exertion of physical force to remain stationary, when we are subjected to pressure or impulse, so also does it require an exertion of rational and volitional force, to suspend a mental decision, when strong motives are urging us to one side or the other. It often happens, accordingly, that the determination to act arises simply from the relaxation of the suspensive effort. We become weary of the exertion it requires to hold ourselves unmoved, and resigning our will to the influence of one or other of the desires which play upon it, we act accordingly. Or, secondly, the power of decision may assume a more positive form. We may forcibly keep our attention fixed upon one point, in spite of all distractions, until it fills the field of our wishes, and the determination to act follows accordingly. Whether the will-force, however, be exerted statically or dynamically, in both cases alike there must be the power of bringing on a decision resting with it, in order that the action pursued may bear the stamp of volition; for, to whatever extent the power of decision ceases to exist, and we become the play of external influences, the will ceases to bear its proper character, and merges into mere instinctive action.*

4. The fourth and last thing necessary to a volitional act is the capacity of carrying out the decision arrived at by means of the motor mechanism. How, or why, or through what inward process, a train of thought can affect the nervous centres, so that a corresponding movement should take place,

* We shall show in the next chapter how the power of decision is logically consistent with the necessity we are under of having each individual action of our lives determined by what is, *pro tempore*, the strongest motive.

and a set of nerves and muscles be brought into play, of which we know nothing whatever, remains one of the deep mysteries of our existence. We know merely that it is so, and that this last automatic process is necessary, in order to complete the act which the will has already decided upon. Where these four elements, therefore, which we enumerated, combine—*i.e.*, where there is, 1st, intelligence to comprehend a purpose, and plan a course of action leading to it ; 2ndly, the capacity of balancing motives ; 3rdly, the power of decision ; 4thly, the motor mechanism standing at the soul's behest, by which the decision can be carried out—then there may be an act which can be called purely volitional. Of such a complex nature is the human will in its developed state. The only element peculiar to it is the active or motor power developed through the nervous organization ; the volitional use of this power being wholly due to the co-operation of the intellectual faculties.

Reason and will, accordingly, can never be disunited. The very essence of the will in its higher intensity consists in the power we possess of resisting importunity of the passions and desires, and of acting under all circumstances according to the determinations of the reason. As reason may become perverted, these determinations may unfortunately be either good or evil ; and so we may have a strong will, either in the cause of right or of wrong. But the essential point remains the same. Where the intelligence holds the helm, and the actions are determined by it, there we have will, properly so called ; and the course by which we come to the power of ever following the track which reason points out is the course by which the power of the will is developed from its first weak and infantile form up to the height of what we term an iron resolution.

Now, then, that we have established a definite idea of what we are to understand by the will, and shown that it is, not a separate and distinct faculty, but simply a mental

habitude, by virtue of which we are enabled to act in accordance with intelligent purposes, we can trace the process by which volitional power, or the power of will, is created and matured. To understand this, we have merely to go back to the general law of mental development. The tissue of our consciousness, as we have many times shown, is woven by the accumulation of residua, just as that of the body is constructed by the histological processes. Moreover, as a large accumulation of muscular tissue of any particular kind gives additional power to the organ, so, to carry on the analogy, does a large accumulation of similar residua give increased force to any special mental activity.

The working of this law has been shown abundantly in connexion with the development of our intellectual powers. It is by the law of similarity (*i.e.*, the combination of similar residua) that our perceptive power is formed and matured (Part II. chap. v.). It is by the same law that our ideas blend into generalized forms (Part III. chap. iii.). It is by the same law, again, that we form concepts, and carry on the whole process of abstraction and generalization (Part IV. chap. ii.). In every case there is a separation of dissimilar, and an attraction and melting together of similar experiences into generalized or intensified results.

Now the very same principle we have seen to be so operative in the construction of our intellectual, is equally operative in the construction of our active powers. Every time we perform a given action, a residuum is left in the mind which renders the facility of performing it again, and the tendency to do so, the greater. To this fact we have already traced the power of habit, and the growth of the practical instincts ; and to this same general law we shall now be able to trace the further development of the will.

The law, as applied to human action, may be thus stated : —The power and the tendency we possess to follow any given course of action is proportional to the frequency with which

such action has been repeated, and the consequent strength of the mental habit which is formed in this special direction.

The child in early life has formed as yet no habit with regard to his active power; he does, therefore, at every moment, whatever he feels himself impelled to do by the temporary motives and impulses acting upon him. If he grow up to do this without any check on the part of parental or other authority, the habit soon becomes strengthened, residua accumulate in this special direction, and control becomes exceedingly difficult. Compare this case with a child brought up under stern and imperious command. The activity here developed assumes quite a different character. In place of following his wishes and impulses, as they come and go, he is afraid to yield to a single desire; he is so accustomed to repress his own wishes, and act only upon authority and command, that all his volitional tendencies are fixed in this direction. He will hesitate to do what his own feelings prompt; he will constantly fly to the performance of what is sternly enjoined.

Take another example from the American Indian. In ordinary life he is the creature of his impulses and passions. He cannot be brought to act upon any intelligent plan, such as that which civilization imposes, but gives himself up mainly to his instincts and appetites. This he does not only from habit, but also by virtue of residual tendencies which he has inherited from his forefathers, and are so strong that they will often break through the influence of education when education has been tried, and impel the youth, when free from restraint, back again to his native forests. This very same Indian, however, who cannot bear the control of civilization, can exercise the most unbending will when taken in battle and subjected to torture by his enemies. He and his forefathers have learned to look upon endurance in this respect as a virtue and a necessity; and, in proportion as they have been accustomed to command themselves under

suffering, they acquire a power of volitional restraint through the accumulation of these special residua, which more civilized men are wholly unable to exhibit.

By the operation, again, of this same law we have a key by which to explain the phenomena of the passions. The passions are complex states. They involve, first of all, some natural or artificial feeling, which is productive of pleasure or gratification. Then, secondly, in order to produce this gratification, some act has to be performed on our own parts; which act, thirdly, soon becomes intimately associated with the pleasure we derive from it. Every time this act is performed, and the gratification is experienced, a fresh residuum is deposited, and the tendency to repeat the action becomes stronger. Thus in process of time the craving for the pleasure, and the tendency to perform the act which supplies it, becomes so strong that they together overcome the suggestions of reason, and get the complete mastery over the will.

Thus, drunkenness as a passion begins with the natural gratification we derive from assuaging our thirst. This gratification we find heightened when what we drink has also an exhilarating effect upon the mind. The oftener the act of drinking, with a view to this exhilaration, is repeated the stronger the tendency becomes, by the natural operation of the law we have expounded, to do so; and, at last, when the accumulation of residua, which impel us to yield to our craving for enjoyment, becomes more powerful than those which lead us to follow the decisions of our reason, then intemperance triumphs over both our rational nature and our will, and renders us absolutely incapable of resisting the passion thus gradually acquired. The only way by which the drunkard can possibly be reclaimed is by withholding the means of gratification until other and antagonistic residua can be formed, which abstract sufficient force from those in which the passion is seated to enable the reason and the better feelings to recover their sway.

It is not necessary to go through the long catalogue of the passions and verify this analysis in each case. But if we were to take them all one by one, if we were to examine the phenomena actually presented by those who are impelled by avarice, ambition, jealousy, love, hatred, gambling, &c., we should find that these passions all begin in a natural feeling of gratification, and are then built up step by step, by the accumulation of residua, which residua become more and more powerful in impelling us to action, exactly in proportion as they are multiplied by the frequency with which we have yielded to the temptation. So strong are these accumulated influences, that they still prompt us to action in the same direction, even when all the freshness and zest of the pleasure, which the passion at first afforded, has passed away.

The passions give an intensified power of action, but we do not say in this case that it is strength of will which prompts us. We reserve the name of will for that whole region of activity in which intelligence, in some form or other, is the governing and impelling principle. Exactly as we may contract by habit an invincible tendency to act with a view to some particular gratification, and thus bring ourselves under the domination of a ruling passion, so by the very same law we may form the habit of always shaping our actions in reference to some rational design or purpose. When such a habit has been formed, and formed so strongly that every impulse, every wish, every temptation, every passion, is set aside by the fixed resolution we have made of acting not from these, but from a higher motive, then we are said to possess a strong will. The development of the will, therefore, is simply one particular application of the general law—That the accumulation of power in any faculty we may possess, or acquire, is proportional to the mass of residua we form of any given character.

The ordinary process of this development is not very

difficult to comprehend and describe. Let us go back again to the indifferent period of childhood, where the active power is lying, as it were, balanced amongst the different motives which will soon bear upon it, and which will inevitably draw it into some predominant direction. We will suppose now that the educating influences are favourable. When this is the case, then every time that the child is unduly prompted by passion, or selfishness, or indolence, to neglect a duty or commit a fault, a salutary restraint is exercised. The necessity of subduing the appetites, and the superior excellence of actions which are in accordance with rational conviction, is first explained, and then firmly enforced. Every conquest which is thus gained over a passion or an appetite, and every instance in which reason or duty is accepted as the guide, strengthen the tendency to follow reason and duty in place of mere inclination. What is done first, under the pressure of authority and a wise compulsion, is soon done from a perception of right, and from the habit of being influenced by it. Thus, as the parental authority is relaxed, we transfer our allegiance to the more general claims of moral law, and acquire the habitude, by the continued observance of this law, to act uniformly in accordance with the precepts which it enjoins.

The mere perception of the excellency of the moral law, and the great desirableness of acting on it, are not enough. Thousands there are who approve one course and follow another. Their reason is sufficiently enlightened to see and admire the good, the beautiful, and the true; but the proper volitional residua have not been accumulated; or, if accumulated, there are other accumulations which impel them to follow certain appetites and passions, so as to render their life one perpetual struggle between opposing tendencies. Where the mind is the theatre of such struggles, we agree in deciding that the will is weak. When such struggles cease by the conquest of reason and conscience over impulse and passion, we agree in saying that the will is strong.

It is by the consolidation of these habits, finally, that the general result is produced which we term character. A good or bad character, a weak or strong character, an ordinary or extraordinary character,—all these express different states into which we are brought, in regard to the mode and motives of our action, by means of the processes just pointed out. Of course we must take into account the hereditary tendencies which may give a bias in one or another direction ; but allowing for these, the character of each individual is formed by the very same law that shapes our active habits, and puts the regulation of our practical life at the disposal of inclination or reason, of passion or of moral law. Thus from performing the more simple and indifferent actions as the result of a conscious purpose, we gradually rise to the performance of more important ones ; learn to act on a fixed purpose, even when passions and temptations draw us in another direction ; give to life itself one great purpose, which we ever pursue ; and thus finally form character.

The education of the will is really of far greater importance, as shaping the destiny of the individual, than the education of the intellect ; and it should never be lost sight of by the practical educator, that it is by amassing and consolidating our volitional residua in certain given directions that this end can alone be secured. Theory, and doctrine, and inculcation of laws and propositions, will never of themselves lead to the uniform habit of right action. It is by doing, we learn to do ; by overcoming, we learn to overcome ; by obeying reason and conscience, that we learn to obey ; and every right act which we cause to spring out of pure principles, whether by authority, precept, or example, will have a greater direct weight in the formation of character than all the theory in the world.

CHAPTER V.

ON THE FREEDOM OF THE WILL.

THE substance of the foregoing analysis of the human will is as follows:—Action is natural to man; the whole structure both of his mind and body proves that he was distinctly formed for it. Action begins prior to consciousness; and, even after the light of consciousness has arisen, there are still many actions which are performed unconsciously; and many others, of which we are indeed conscious, but over which we exercise no personal control. Next to these mechanical actions come the instinctive ones, which spring spontaneously out of some natural feeling, and become gradually more and more special and determinate, through the influence of the circumstances in which we are placed. The actions we perform under the impulse of the passions approach very near to the instinctive character. Passion, like instinct, springs out of a pleasurable feeling, and is rendered imperious and irresistible only when the residua which impel us to seek the given pleasure become stronger than those which urge us to act in accordance with rational motives. Lastly, when reason and reflection come in, and either determine or modify our actions by the motives they present—that is, when the more direct incentives to action are superseded, until the understanding has given its decision on the case, and this decision is made available in determining what course we should pursue; then, at last, our actions are said to be voluntary

and free. Thus WILL is simply human activity under the guidance of purpose and forethought.

Reason, however, is not the measure of the will. The strength of the one does not depend on the strength of the other. The tendency to act on any given principle, *ceteris paribus*, is proportional to the frequency with which we have already done so. If we form the habit of acting with a view to any personal gratification, until the tendency to do so becomes dominant, then we have an example of the origin and rise of a dominant passion. If we form the habit of acting uniformly according to the plan which our intelligence decides to be the best, we are said to possess a strong will. But the strength both of the passions and will depend alike on the accumulation of special motor residua, and the bent which they give to our activity.

This view of the nature and origin of the will would seem to bring all human activity under the dominion of law; and, if so, to cut off the possibility of maintaining the existence of freedom. We may, indeed, seem to ourselves to act freely; but this, it would appear, is only an illusion, which arises from our incapacity of following the complicated movements by which the action is really decided.

There is unquestionably an element of truth in this view of the question; but it is not the whole truth. Actions looked at objectively, in relation to the mental impulses which immediately give rise to them, do certainly take place in accordance with certain fixed laws. Given, a mind in a certain state, and a certain motive acting upon it; and a definite result will assuredly take place. We all act towards our fellow-men on the conviction of there being such laws to regulate their actions; and if we are wrong in calculating what they will do, we attribute it not to any arbitrariness in the essence of human nature, but to our own want of knowledge, insight, or sagacity. There is, in fact, no conceivable possibility of any one acting wholly without a motive; and

assuredly we could not attribute a moral character to such an action, even if it were possible. The question then comes, —How are we able to conserve the moral quality of human activity, when it can be argued, on the one side, that, if our actions are subject to law (*i.e.*, determined by motives) they must be necessary; and, on the other hand, that, if they are performed without motive, they can have no ethical character whatever? This is the problem which the ordinary hypotheses of the necessarian and the libertarian confessedly leave unsolved; and as the results of both come strongly into conflict with the consciousness which we all seem to possess respecting the freedom of our actions, and the moral character they derive from such freedom, we can hardly fail to conclude that there is some point of view in which both theories will blend, and, at the same time, become reconcilable with the phenomena of human life and consciousness.

Now, in seeking for this point of view, let us ask, first, what the necessarian means by his doctrine of moral causation; whether, in fact, he means anything at all contradictory to the common notion of free agency. If all our volitions have an objective cause (that is to say, a cause not a part of, or dependent upon, ourselves), which is certain and unalterable in its effects, then it is manifestly impossible to avoid the conclusion that man is the subject of an irresistible fate. Every action, it is said, is the effect of a volition, but every volition is produced by a motive (or, in the language of necessity, a cause) over which we have no control; the inevitable conclusion is, that man is as much a machine under the effect of motives as a steam-engine is under the impulse of its moving power. This conclusion, too, be it observed, applies to man's whole practical life; if it be true at all, it must be true respecting the whole province of human action, because every possible action is the result of some motive. The reasoner, therefore, who argues that every moral or immoral action which a man commits is necessary, because

certain motives have acted irresistibly upon him from without, must accept the full conclusion that everything else in human life takes places by a like constraint; that, by a similar necessity, an agent makes clothes, mends shoes, builds houses, lights fires, cooks provisions, and does everything else that depends upon our so-called voluntary activity. The fatalism here involved cannot be met by the plea that the agent in question placed himself in the way of circumstances which have led him to this or that particular mode of life; for, if he did so, it was by means of a volition that he did it, a volition which was determined by a previous motive. Neither can it be met by the plea that he was induced by some other agent to follow one course of action or another; for that agent likewise was the creature of fate; his will to prompt was determined by a like necessity; and the will previous to, and causative of that, was determined in the same manner; so that, beginning at any action of any voluntary agent, we may go back through a succession of causes, till we come to the great First Cause, and thus evolve the idea that the whole sum of human actions is one chain of cause and effect, absolutely fixed and determined from eternity to eternity.

Now, the philosophical necessarian, we know, shrinks from practically accepting that conclusion. He will not admit an absolute and fixed necessity, but only a moral or philosophical one. Besides, he speaks largely of education, and the importance of remedial means, and the benefit of cultivating the intellectual powers and the moral feelings. Moreover, he exhorts his fellow-men, on the very ground of his doctrine of moral causation, to get the sources of proper culture for themselves, and to put them into the hands of the people at large, as the only method of making them virtuous and happy. Astounding folly must all that be, if human beings are not contingent, if they move in a chain of cause and effect from the eternity past to the eternity to come, and if all our actions

are absolutely determined by what is entirely beyond our control ! Exhortation and effort must be quite out of place, if the whole sum and substance of human life is a necessary chain of this nature ; for whatever we may appear to do of our own accord is, on this system, but the mockery of a liberty, which we seem to possess, but which practises upon us a complete and perpetual illusion. This extreme, then, we repeat, the philosophical necessarian avoids ; he shrinks back from the abyss of fatalism, however strongly his principles may draw him to its brink.

If, then, the doctrine of necessity, thus modified by the term philosophical, does not mean that all human life is machinery—that it is a series of fixed results which can never be altered, it must admit, in some form and to some extent or other, that man is the master and regulator of his own mind, and has sufficient control over his dispositions and actions either to render himself improvable, or to make himself a subject of blame when the means of improvement are neglected. Whether improvement originate in ourselves, or in the influence of another, still it originates in man, and equally shows him to be, in some sense, a source of moral action.

Now, let us look for a moment at the libertarian hypothesis, and see wherein it differs from the foregoing. First and foremost, we find a certain power of self-determining volition asserted—that is, as its opponents correctly show, the power of choosing without preference, or a choice without choice. The advocates of this self-determining power, with all their zeal, can never show any decisive cases in which we choose without being induced by a motive ; they are always obliged, for illustration, to have recourse to some altogether insignificant actions, such as choosing one out of fifty shillings, which cannot, in the nature of things, have any moral quality attached to them ; while, in all the important movements of our life—those by which our character is

estimated—it is perfectly evident that we do and must act under the influence of certain motives. The libertarian, in fact, when pushed hard by his opponent, is always obliged to concede the point, that motives not only have an influence upon us, but do really determine our choice in all the great practical affairs of human life; nay, that the existence of a motive is absolutely necessary to the moral quality of every action; so that we must, after all, admit that man does not act ordinarily free from motives, but in strict accordance with them.

Now, let us see in what consists the discrepancy between these two antagonist doctrines, when shorn of their respective anomalies. The necessarian, if he mean anything by prefixing the word philosophical to his favourite dogma, admits that man is, in some sense, a free agent, that he forms plans, that he modifies character, that he acts upon designs which he can carry out or suspend; in one word, that he is all that the libertarian would contend for, except that his volitions are ever determined by the strongest motives, instead of determining themselves. On the other hand, the libertarian, when pressed for his proof of the self-determining power, is at a loss to find any decisive actions in which this power exercises itself in opposition to or irrespective of every kind of inducement. The only real point of dispute left, then, is this: how are we to reconcile that power of free and intelligent action, that capacity of design, that source of amelioration, or the reverse, which all admit to exist within ourselves, with the unquestionable fact, that we ever choose, and must choose, under the influence of the strongest inducement? In other words, how is our freedom of choice consistent with the necessity of acting from a motive?

The whole of the difficulty we now see is traced up to the word motive, and therefore it is in the analysis of this term that we must look for illumination. What, then, is a motive? Strictly speaking, it is that which immediately precedes our

determination to act. That which immediately leads to such a determination, however, must evidently be an emotion, for it is granted on all hands that emotions are the active or impulsive principles of our nature. A motive, therefore, in the proper sense of the term, can be nothing else than the mind itself in a certain state of feeling ; and, in this view of the case, there can be little difficulty in admitting that every volition is determined by means of a motive, inasmuch as this is only another expression for the palpable fact just stated that the mind in a state of emotion is ordinarily the immediate antecedent of human action. Necessarians are perpetually arguing as though motives were objective realities ; whereas, nothing objective can possibly have the least power in exciting us to action, until it is subjectively combined with some kind of desire. Such emotional feeling alone it is which acts as a moving power upon the will.

We see therefore, at once, if this be true, in what manner man, though under the necessity of acting in accordance with motives, is yet perfectly free. He cannot, it is true, alter the relation between emotions and volitions generally, inasmuch as that would be to alter the very laws of our constitution ; but there are a thousand ways by which he modifies his own states of feeling, and through them, of course, his volitions also.

The relation between emotion and volition stands on the same footing as that which exists between our perception of premises and our inferring from them a logical conclusion. It is entirely beyond our power to refuse a logical conclusion while we have a conviction of the truth of the given premises, nor can our belief be possibly modified so long as the data remain to us unchanged ; but we can easily reconsider those data, and then, according as we find them confirmed or shaken, we frequently strengthen or subvert our belief in the conclusion. Just so, in the other case, while the motive remains, the volition must necessarily follow ; but that motive,

we must remember, is a state of mind, which we can control by a thousand different methods ; and hence, if we can control the motive, through it we can control the volition as well.

But to all this argumentation I am aware the necessarian opponent might now urge in reply, that the very fact of our influencing our own mental states by the presentation of fresh motives and inducements to the mind, must itself depend upon a volition, which volition is determined by a previous motive, and so on, *ad infinitum*. It must be remembered, however, that motive here means a mental state, and that our mental states do not solely depend upon external circumstances, over which we have no control, but also upon our own spontaneity or personality. If this spontaneity and personality be denied as a part of our constitution, and man be made wholly dependent upon externals, then we must appeal to psychology, for in the psychology we start with, the whole question is cradled. The argument of the necessarian—that every volition must be determined by a previous volition, and so on to infinity, will hold good only on the psychological principle, that will and desire are the same thing, both equally expressing a passive state into which we are placed by the strongest inducement. The psychology which maintains this theory starts from sensation, and from it derives all the phenomena of the human mind. The mind itself in its view is passive ; it is a bare receptacle of impressions and feelings, a sheet of blank paper ; and every volition, therefore, must on this theory have its cause or condition out of ourselves. This psychology we have now disowned ; we regard it as altogether untenable ; disproved and exploded by the strictest inductive analysis of the facts of our consciousness.

A close analysis of these facts enables us to detect three classes of phenomena in the human mind ; those, namely, of intelligence, of feeling, of will—a classification to which all modern science is tending. Intelligence creates conceptions,

laws, rules of action ; feeling supplies inducements and impulses ; will creates effort, activity, the emission of voluntary power. Between the faculty as cause, and the product as effect, there is no intermediate step. It is no more requisite to ask, why will produces effort and choice, than to ask, why intelligence gives rise to ideas, or sensibility to impulses ?—The supposition that voluntary effort and choice can spring causatively from an inducement or external motive is the old error of sensationalism invading the theory of the will, that, namely, of substituting the occasion for the producing cause. The understanding and the feelings both present inducements to the will ; and because the will follows some or other of them it is supposed to be necessarily determined ; but this is a false conclusion. These inducements are but the occasions of our volition ; the power which produces them is that original spontaneity, that independent and personal source of action which we term "the will" or "the me," and which can react upon all the arguments of reason and all the impulses of emotion. The will, as an abiding fact in our constitution, contributes a large element to the formation of every motive ; and when the motives are presented, it gives the whole *nexus*, by which volition or choice is effected.

Whenever or wherever power is put forth there must be not only an occasion, but also an effort or a spontaneous movement as its cause. Hence all power originates in mind (the only spontaneous principle), and that either the mind of God or the mind of Man ; and the very same argument which pretends to prove that Man is not free, because he chooses from reasons or inducements, would also prove that God is not free, because He never acts without a plan. If we once give up the idea of spontaneity as the spring of effort or choice, and account for that effort by the inducement alone, nothing can save us from the admission of an enormous and iron fatalism to which God and Man are alike subjected.

We allow, then, that volitions must necessarily follow from motives ; that there is in fact a fixed relation between them ; but those motives are subjective states of mind, such as dispositions, affections, passions, &c., which our intellectual and active natures are adapted by their very constitution to develop or to restrain. When, therefore, the necessarian enunciates the great truth, that no man could have acted differently from what he did under the given motives, all that he really expresses, if he be not a fatalist, is the commonplace and most obvious fact, that emotions are active principles of our nature, and that we are naturally formed to follow their impulse. If he deny that we have any control over these inward motives, then all his exhortations to the cultivation of the intellect and the feelings are naught but folly, and there is no refuge but in complete circumstantial fatalism. We affirm, then, that in principle there are only two possible hypotheses respecting liberty and necessity ; the one is fatalism, the other is free-will, in the sense in which we have employed it.

There is one thing which we freely grant to be fixed and necessary on every hypothesis, namely, the relation existing between our emotions and our volitions ; and the philosophical necessarian, keeping his eye upon that point, has enstamped all volition as constrained, because it is always excited by a uniform and definite law of our nature: but as well might he call our actions constrained also, because they necessarily follow whenever the volition dictates and impels. When we see an action (unless it be a purely mechanical one) we know that it arises from a volition ; and in the same way, when we observe, or are conscious of a volition, we know that it arises from some desire as its real proximate exciting cause ; but behind both these lies the solid basis of human liberty, grounded upon that intelligence and native activity, which are the indestructible attributes of all moral and responsible creatures.

The truth of the matter may be stated in a very few words.

Mind is essentially an active principle ; but, without reason, its activity would be blind and aimless, following the impulses which flow in upon it from without. In proportion as reason becomes stronger, more vast, and more commanding, just in that proportion shall we find it regulating and directing our emotions. But our emotions are the real motives which excite volition, and volition impels to action ; so that it is in the possession of reason that we discover the great regulating principle by which our natural activity is either restrained or directed, and by which we are enabled both to sketch out the designs of our life and to pursue them in spite of all the obstacles which may stand in our path.*

The substance of the above analysis was written nearly twenty years ago. A very elaborate and ingenious work on the same subject has been recently published by Mr Thomas Solly, of Berlin, entitled, *The Will, Human and Divine* ; in which the same fundamental view is propounded, and the same solution of the problem at once more deeply grounded, and carried out into further details. The following is one of the passages in which the argument, so far as it relates to human freedom, is summed up.

“The argument, divested of its mathematical dress, amounts to this. At any instant of time my action is restricted to certain limits by the laws of nature, human nature included ; but within them it has free scope by virtue of its liberty. This latter is exercised in a certain act of self-determination of the subject upon which, as will appear afterwards, its relation to the principle of moral law depends, and the line of action corresponding to the intersection of the two consecutive subjective states (*i.e.*, the possible action which is common to the two immediate successive postures of character) is the result. Let us take an example. The murderer is in the presence of his victim, but he still entertains some feelings

* The above analysis is abbreviated from the Author’s *History of Speculative Philosophy in the Nineteenth Century*.

of compunction, and has not yet arrived at that culminating point of depravity which is necessary to the act. The plane limiting his immediate possible action, and determined partly by the external circumstances of his position, and partly by the internal circumstances of his character, is a very bad one ; but still the act of murder does not fall within it, and he cannot by a single act of will carry out his devilish conception. The various directions which his act may take in this plane correspond to the variety of thoughts still possible to one standing on his moral level. He may encourage the slight gleam of good feeling on the one side, or raise up visions of gain or gratified revenge on the other. By an act of self-determination he assumes a second plane of character, slightly inferior to the first. The objective act resulting from it must, in the moment of transition, be one of the various possible acts conformable to the first posture of character (*i.e.*, it must lie in the first plane) ; but it is one of the worst of such acts, having been so determined by the vicious direction in which the second more degraded plane of character has intersected it. In other words, the precise thought, which alone is common to the prior character and the second assumed state, is the thought which is actually chosen. This second state of character, still more vicious than the first, also determines the second thought, which is perhaps worse than any that was even possible in the first state. The self-determinations thus continue to succeed each other, each being a function of the will and the previous character, and each pair determining, by their intersection, the resulting objective act ; and, in the case supposed, each act worse than the last. Finally, the last state but one contains the murder, not perhaps as a point, but subtending a large angle of possible action. The last state follows ; the common thought contains the murderous volition, and the fatal act is completed."

The whole doctrine of this chapter may be summed up, in conclusion, in a single sentence. Motives determine the will,

and, so far, the will is not free ; but the man governs the motives, allowing them a less or a greater power of influencing his life ; and, so far, the man is a free agent.

Our analysis of the nature and development of the human will is now complete, and it will be useful to recapitulate the chief points which have been insisted on as explanatory of this part of our mental constitution.

(1) Every living organism presents two distinct features, without which its very existence, as such, cannot be imagined. These are, first, a certain form or type on which it is planned, and into which it always grows ; and, secondly, a vital power, which it ever puts forth, to maintain, conserve, and develop this, its typal nature. Thus, every plant, and every animal, has, on the one hand, a typal form, and contains, on the other, a principle of life, which reacts upon the surrounding stimuli, and enables it to live, grow, and come to perfection. The form or idea of the living organism, then, is the analogue of the intellect ; the vital power is the analogue of the will.

(2) Passing from the province of nature into that of mind, we find, accordingly, the same two features reappearing on a higher platform. The rudimentary form of the human intelligence is seen in sensation and perception, in which the mind first begins to deal with the objects of nature as material of knowledge ; the rudimentary form of the will is seen in the motor-power and the primordial instincts, in which we begin to deal with the objects of nature as material for action. From the first feeble efforts of intelligence, as seen in our primary perceptions, the mind grows up through series of stages to the highest exercise of reason ; and, from the first feeble reaction of the motor mechanism, the will grows up through a like ascending series to the highest exercise of its free agency.

(3) The steps which the growth of our active powers passes through are the following :—First, the response of the motor-nerves to the external stimuli affecting them at any of the extremities, or reflex-action. Secondly, activity under the form of instinct—activity, that is, which is initiated and guided by our natural desires or physical necessities, without any conscious plan or pre-determination. And, thirdly, activity, which, however excited, is kept under the control of our reason, and thus made to conform to certain conscious ends or purposes.

(4) The law which regulates the amount of our volitional power we find in that universal principle of mental growth, according to which the strength of any special faculty is seen to be proportional to the residua which are accumulated in this particular direction. The more frequently we perform an action from any particular motive, the stronger the tendency becomes for us to continue to do so. We say that a man possesses a strong will when he has acquired by habit the power of making his actions conform to his rational pre-determinations, in spite of all the incentives presented by the desires or passions. The amount of our volitional power, accordingly, is proportional to the habit of self-control.

(5) Lastly, we say that an action is free, when it is pre-arranged by an intelligent purpose, and its execution can be either suspended or carried out according to our personal determination. Freedom does not, therefore, consist in acting without motives; but in the power we possess of modifying our motives, and either elevating or depressing the moral plane of our voluntary activity. Thus we have a foundation on which human responsibility and practical morality can alike be securely based.

PART VII.

ON THE FEELINGS.

CHAPTER I.

HISTORICAL NOTICE ON THE PSYCHOLOGY OF THE FEELINGS.

WE come now to a branch of psychology which is peculiarly obscure, and has consequently, hitherto, rarely been treated in a comprehensive and thoroughly scientific manner. Every one knows what feeling or emotion is,—viewed as a fact of his own personal experience; but how it arises, of what elements it consists, what relation it bears to the understanding, and what to the will—these are points which have not yet been made, by any means, sufficiently plain, and which still lie open to much renewed investigation.

In the ancient psychology, from Aristotle downwards, the phenomena of the human mind were divided ordinarily into two great classes, namely, the intellectual powers and the appetites; the latter member of which included everything which we now express by the terms will, desire, and passion. This twofold classification remained in force through the scholastic ages, and has come down with the weight of all the authority which antiquity can give, even to recent times.

Amongst modern philosophers who have adopted this two-fold division, there are some who unite the feelings, as subordinate phenomena, to the intellectual side, and others who unite them to the will. Thus, Wolf, who represents the current mental philosophy of Germany in the middle of the last century, regarded feeling as a dim and indistinct kind of intelligence, and attributed all that is peculiar in it, over and

above this, to the relation which it bears to pleasure and pain, to good or to evil. This Wolfian theory was adopted, with some modifications, by Hegel and his school. Hegel terms feeling, "das dumpfe Weben des Geistes in sich," an untranslatable expression, which Waitz pronounces to be a "stumpfe Metapher." The general Hegelian idea, however, is plain enough, namely, that feeling represents the crude and infantile state of the mind (a state analogous to chaos in relation to the world), in which no perceptions, ideas, or concepts have yet come to a full, clear, and distinctive form. This Hegelian theory, though it fits very well into the dialectic process by which the mind is construed and explained in that school of philosophy, yet does not cohere by any means so closely with the facts of our mental experience. Various feelings do indeed accompany our perceptions and ideas, through all their developments, under certain circumstances hereafter to be defined; but the whole history of the intellect from the crudest and most indistinct commencements, can be traced regularly upwards in its growth and development, without ever passing through any stage which can be strictly termed emotional. All ideas, notions, concepts, however indistinct or imperfect, must have some specific object, some material independent of the mental conditions, under which they are viewed. An idea which has no object would be a nonentity. But there are many of the emotions which have no specific object at all. Feelings, like expectation, impatience, ennui, &c., are purely subjective states, which have no sort of resemblance to a dim idea. If, while in such a state, we fix our minds upon any object of contemplation, however indistinct, the emotional condition merges at once into an intellectual one. This fact, we shall hereafter see, draws a clear line of separation between the essential characteristics of an idea and an emotion. The one is bound to a specific object, the other is not.

In this country it has been more common to classify the

emotions amongst the phenomena of the will. Reid includes all our mental faculties under the two heads of intellectual and active powers ; and then, having made this twofold division, he classes under the latter all the emotions, on the ground of their being principles which lead directly to action. Here, however, there is a manifest confusion "in limine." The power of action, whether mechanical or volitional, is one thing, the motive which leads to it is another. It does not follow that, because a particular mental state leads or impels us to action, it is, therefore, in itself, of a volitional character. Feelings are, in fact, of all our mental states, the very furthest removed from volition. They are passive in their nature ; they come upon us without any effort of our own ; their whole course is marked with the most perfect spontaneity ; we find ourselves often unable to control them, either in regard to their existence, intensity, duration, or extinction. On every ground we are led, by the phenomena of the case, to separate them from the whole region of volition, however often they may serve as the moving power by which the will is prompted to activity.

The distinction which subsists between intelligence and feeling, on the one side, and volition and feeling on the other, has gradually, indeed, become so well defined, that, if we regard the psychology of the nineteenth century, whether in Germany, France, or England, we find that the great weight of authority goes in the direction of separating our mental phenomena into these three distinct classes.

The first well-defined enunciation of this threefold classification is due to the genius and penetration of Kant. Both in his *Criticism of the Judging Faculty* and in his *Anthropology* he has pointed out the vast rôle which is played by the emotions in the whole economy of human nature, and has placed them, accordingly, in complete co-ordination with the intellectual and the volitional powers.

In looking attentively, however, through the views and

reasonings of those psychologists who adopt this threefold division of the mental phenomena, we find that there are some who simply assume the three provinces of intelligence, feeling, and will, as springing out of three ultimate and irreducible powers of mind, and others who either develop one series of phenomena out of the rest, or all of them alike out of certain more fundamental and primitive laws of mental activity.

Amongst those who assume three distinct and primitive powers, we may mention, first, the principal psychologists of the French Eclectic School, with M. Cousin at their head. These writers, as a rule, lay down three fundamental facts of mind, namely, *intelligence*, *sensitivité*, and *volonté*, as the great starting-points of all psychological investigation, and upon this foundation they have reared a system of mental philosophy, which, if not as deep in its analysis as some others, yet presents no palpable deficiency in its conclusions and results. M. Garnier adds the *faculté motrice* to the other three, but this addition arises manifestly from want of following up his analysis of the will to its origin in the primordial facts of instinctive activity.

In our own country, the co-ordinate threefold division we are speaking of claims the high authority of Sir W. Hamilton, who has clearly distinguished them from each other, with his usual logical ability, under the names of cognition, conation, and feeling. In the phenomena of cognition, he shows, consciousness distinguishes the object known from the subject knowing; in the phenomena of feeling, on the contrary, consciousness does not perform this act of separation, but both the subject and object are, as it were, fused into one, we ourselves being, in this case, the objects of our own immediate consciousness; in the phenomena of conation there is, as in those of cognition, a separate object, and this object is also an object of knowledge; but there is also an impulse, which results in an endeavour either to obtain the

object or ward it off. He adds, however, that, "although in theory the feelings are thus to be discriminated from the desires and volitions, they are not to be considered as really divided." Both are conditions of, perhaps, all our mental states; and while the cognitions go principally to determine our speculative sphere of existence, the feelings and conations more especially concur in regulating our practical life.

Let us turn next to those psychologists who do not regard the feelings as being simple and primitive facts of mind, but who explain them by means of some complex process. Schleiermacher held a peculiar theory on the subject. He defines feeling as "the identity of thought and volition"—the transition point in which thinking passes over to activity. In thinking, we bring, as it were, the existence of things without us home to our own inward consciousness; in acting, we carry our own existence out of ourselves, and impress it upon the objects around us. The negative point between these two contrary activities produces feeling. Most persons, we imagine, in this country would not fail to view this as an over-refined speculation, not of much practical value to psychological science, although there is much which can be said speculatively in its favour.

If we come to the more recent English writers on mental philosophy, we find a very considerable diversity of opinion respecting the nature and origin of the emotions. Mr James Mill, in his *Analysis of the Human Mind* maintains the theory, that the emotions are simply the recollections and ideas of sensational pleasure or pain, which has been actually experienced. "The term, idea of a pleasure," he remarks, "expresses precisely the same thing as desire, and the idea of pain the same thing as aversion."

This whole theory, which is based upon the ultrasensational view of mental phenomena, is altogether unsatisfactory. For, let it be observed, 1st, that a sensation can never be revived. When it is once passed, it is gone for ever, and

can be renewed only by our being again placed under the same physical condition. We may remember the fact that we have been the subjects of particular sensations, either pleasurable or painful; but the idea we thus revive has no kind of similarity with the sensation itself, nor does it at all necessarily involve any emotional element whatever. We may think with perfect calmness of our past pleasures and pains; and, so far from the idea of suffering being always an unpleasant state of mind, it is frequently quite the contrary.

“*Hæc olim meminisse juvabit.*”

The memory of our past misfortunes may be productive of the liveliest pleasure, while the memory of our past joys may occasion equal regret.

2ndly. If Mr Mill’s theory, that the idea of a pleasure is an emotion, be correct, then the clearer and more vivid that idea, the more potent ought to be the emotion. The relation between an idea and an emotion, however, is just the reverse. The more the mind becomes intellectually occupied with an object, though that object should be our own joys and sorrows, the more the emotional state subsides; while the tension and ebullition which is characteristic of every powerful emotion is wholly incompatible with any clearly realized idea.

The young soldier, when he first stands against bayonet points, and hears the bullets whistling around him, is full of fearful emotions, though he has a very indistinct idea of all the suffering attendant on war. The veteran who knows and has experienced that suffering in all its bitterness, goes to battle without any emotional excitement at all. There is mental tension, in the one case, over and above all the ideas of pain which may exist in the mind, and no mental tension in the other; and this forms precisely the difference between a state of strong emotion and a state of calm indifference.

3rdly. Mr Mill’s theory overlooks the speciality of

emotional sensibility. It reduces the whole to the form of an idea, that idea having pleasure or pain for its object. But the emotions involve mental phenomena which are essentially distinct either from an idea, or from any mere bodily sensation. Hilarity, on the one side, and depression on the other, can very well exist where there is no idea in the mind as to their cause, and no reference whatever to any past experiences of sorrow or of joy. It is, in fact, the speciality observable in the varied forms of emotional sensibility, which is left altogether unaccounted for by any theory which resolves it into the simple elements of ideas, on the one side, and of physical pleasure and pain on the other.

Dr Carpenter, in the earlier editions of his *Human Physiology*, propounded, from the physiological point of view, a theory of the emotions, in many respects similar to that of Mr Mill. "Just as the simple feelings of pleasure and pain," he remarks (*Human Physiology*, 4th edition p. 784), "are associated with particular sensations, the same feelings connect themselves with particular ideas, and thus are produced those emotional states of mind which directly or indirectly determine a great part of our habits of thought, and are largely concerned in the government of conduct."

According to this view, emotion is simply a specific idea, with the feeling of sensorial pleasure or pain connected with it. This view has been contested by Dr Noble, in his work on *The Human Mind, in its relation with the Brain and Nervous System.** He has there shown with great clearness, that emotional sensibility is not of a quasi-physical character; that it is not dependent on any of those causes which operate in connexion with purely sensorial phenomena; that, so far from this, it may be lowered by superinductive bodily sensation; that it stands not unfrequently in clear antagonism to ordinary sensibility; and that it produces its own peculiar reactions, through the muscular system, distinct from the

* London, Churchill, 1858.

consensual movements. Hence he considers that, for this most elevated and specific order of sensibility, there must be proper ganglia within the encephalon ; and suggests that these may be the so-called optic thalami and the corpora striata—structures which lie immediately beneath the cerebral hemispheres, and form the floor of the lateral ventricle. This view he confirms by a good many facts and considerations which have come under his own observation, and concludes that there is a large body of evidence to show the fundamental distinctness of sensational and emotional sensibility.

Dr Noble still further develops his argument in a subsequent chapter on the emotions and their composition. "Any account," he remarks, "which represents the emotions as merely the pleasure or pain which accompanies certain intellectual states constitutes a very incomplete description. I think it will be conceded, upon reflection, but we must admit the specifically distinct character of our varying states of consciousness as recognized in hope, fear, grief, pride, vanity, love, and other such inward experiences. It is quite certain that we feel in a characteristic manner under the varying circumstances of our intellectual states, quite irrespective of the pleasure or the pain which may accompany them. Fear is fear, and need not be exclusively pleasurable or painful ; love is love, and is only pleasurable under suitable circumstances ; grief, sometimes, is a 'silent luxury,' though ordinarily a poignant suffering. Such psychical states as love, hatred, desire, aversion, joy, sadness, despair, fear, audacity, courage, and so on, in limitless variation, are modifications, I submit, of emotional sensibility, very generally provoked by thought, but still separable from thought ; such modifications, moreover, being distinguishable amongst each other, regarded simply as feelings. So little, indeed, does emotion consist of mere pleasure or mere pain, and so obviously does it include numerous and varied modes of feeling, that, as in the case of external sensation, several kinds of

emotion may be present to the consciousness at the same time.

“ My meaning, however, with respect to varieties of emotional sensibility, will be somewhat plainer if I cite still more particularly the analysis afforded by external sensation. Hot and cold, hard and soft, moist and dry, as sensations, are distinguishable conscious experiences, produced by the qualities of objects, but, in themselves, subjective states, pleasurable, painful, or neutral, as the case may be ; and so with other kinds of sensational experience. The sense of taste supplies, probably, the most complete and readily-seized analogy to the sensibility which we denominate emotion. Thus, sweetness is commonly pleasurable ; to some persons, however, it is painful ; and to others, again, it is neither the one nor the other. In some instances it is pleasurable, painful, and neutral at different epochs of life ; but at all times, and under all circumstances, sweetness is sweetness. In fine, gustatory, like emotional impressions, are sources of pleasure and pain ; they have always, however, a very distinct character about them, and they would be but very imperfectly described in being designated the pleasure and the pain resulting from contact of the tongue and palate with sapid particles.

“ In a somewhat analogous manner, I maintain that emotion, experienced either as a sentiment, affection, or passion, consists, in so far as it is a feeling, of varying conditions of that inward sensibility which I have described under the designation of *cœnæsthesia*. Particular kinds of emotion, though usually determined by the presence of correlative ideas, may yet be conceived, and, indeed, be experienced, in their absence, or prior to them. For example, when a huge watch-dog loudly and unexpectedly barks, I start, from an emotion of fear, which distinctly precedes the idea of danger, the feeling and thought being quite separable. ‘Gratitude,’ says Dr Thos. Brown, ‘is

distinguishable from the memory of kindness received'" (*op. cit.*, pp. 130-4.)

These remarks of Dr Noble seem to me quite conclusive as to the main burden of his argument; that, namely, which points to the existence of a large class of mental phenomena, termed by him forms of emotional sensibility, and the clear separation of these phenomena from those of mere pleasure and pain, however modified by concurrent ideas. Indeed, Dr Carpenter, in the fifth and later editions of his *Human Physiology*, acknowledges the full force of Dr Noble's analysis, and expresses his indebtedness to it for having led him to the "extension of his notion of those states of feeling which constitute the essence of emotion from that of mere pleasure and pain (to which he had previously limited them) to more varied forms of emotional sensibility." With regard to the physiological questions respecting the ganglionic site of emotional sensibility, any present views can hardly be regarded as more than an hypothesis, which it will depend upon future investigations to confirm or refute, as the case may be. And, indeed, Dr Noble has offered only his own suggestion as a rational conjecture.

So far, then, we may regard the analysis of the emotions to have proceeded with a tolerably conclusive degree of evidence. It has been made clear that there is a special class of mental phenomena which cannot be accounted for by regarding them either as any modification of an idea, or as any form of mere sensorial pleasure and pain, or as any combination of these two elements into one. We know, with an approach to certainty, what emotional sensibility is not, but we have not yet learned from any of our physiological observers what it is. I mean, it has yet to be seen what relation the emotions hold to the ideas, how or under what circumstances they originate, and by what laws their development is regulated. This is the point, therefore, which next claims our attention, and to this analysis we have to proceed in the next chapter.

CHAPTER II.

NATURE AND ORIGIN OF THE FEELINGS.

THE word feeling, as used in popular language, is indefinite. Originally it was applied simply to one of the five senses, namely, the sense of touch. But as the phenomena of this sense are, for the most part, distinguished by the two characteristics of pleasure and pain, the term feeling came, after a time, to be applied to any mental states whatever, that are of a pleasurable or painful character. Thus, the same word, which was at first used merely to designate a certain external and sensational phenomenon, came gradually to designate all that immense variety of internal states which bear upon them an emotional character.

In entering upon the region of the feelings, we are embarrassed, at the outset, by the endless variety of phenomena which come under this category. We all know what the term itself implies, as a matter of personal experience ; but that term, notwithstanding, does not present a perfectly clear and definite idea to the mind. The prick of a pin ; the joy of the traveller on his return ; the ecstasy of the lover ; the grief of the bereaved parent ; the sympathy of friendship ; the sense of beauty and goodness ; the warmth of devotion ; the pride of the scornful ; the hatred of the injured, and a thousand other phenomena, are all alike denoted by the one term, feeling. How, then, are we to find a definition which will include these heterogeneous phenomena ? and what is the

common element which runs through numberless states of mind, so utterly different one from another? Until we know this, we cannot be said to have raised the phenomena of feeling from a personal experience into the clear light of a reflective idea.

Most of the systems of mental philosophy which have been current both here and elsewhere have either contented themselves with merely enumerating the phenomena of feeling, without explaining their nature and origin, or have given explanations which are not sufficiently clear and comprehensive. Some of those explanations we have already noticed; and in no instance have we been able to pronounce any one free from defect, or capable of fully accounting for the facts which the case itself presents. In the more recent psychological efforts of Germany, the question of the nature and origin of the feelings has been pursued with better results; and, guided mainly by these, we shall now attempt to analyze the phenomena which they, as a whole, present, and try if we can so far strip away all that is accidental as to lay bare the great generic law by virtue of which they originate and exist.

To do this let us first consider the relation in which the feelings stand to ideas. Can it be said that a feeling is an idea, only with a certain peculiarity attached to it? In other words, can the definition of an idea be shown in any sense to comprehend the emotions as well? The essential characteristic of an idea, on whatever degree of generality it may stand, is, that it presents a separate object of contemplation, which the mind distinguishes completely from itself as the subject. In every idea there must be this duality, viz., the subject which perceives or observes, and the object which is perceived or observed. Failing in this, no idea can possibly exist, for the idea of nothing is equivalent to no idea. Now, in the case of feeling or emotion this duality entirely ceases. It is true we often say, I feel a pin, or a knife, or a chair, or a table; but it is evident that the term feeling here is simply

used for the perception of the object which we acquire by one of the senses. Taking the term feeling, as we now do, to designate the sensibility itself, and not the intellectual process connected with it, we at once see that the object forms no part of the phenomena. Still more evidently is this the case when we come to the emotions, properly so called—those higher states with which we have especially to do in the present chapter. Here the stronger the feeling, the more we lose sight of the object which originated it as a distinct idea. In many cases, indeed, the swell of feeling will remain, even when memory has wholly lost sight of the cause; and we are conscious of depression or exhilaration, as the case may be, without our knowing at all how to account for it. What we are really conscious of, in every case of feeling or emotion, is our own peculiar state for the moment, whether affected bodily or mentally. In this state of consciousness, the subject that feels, and the object felt, fall together. We feel, but we feel only our own states. We may safely conclude, therefore, that a feeling is fundamentally distinct from an idea, and that they cannot possibly be brought as specific mental phenomena under the same definition.

But now we must take another thing into account, namely this,—that if emotion cannot be in any way subordinated to the nature of an idea, yet it can never exist altogether without ideas. There may, indeed, be physical excitement produced by external or internal stimulants, *i.e.*, by quickening in any way the circulation of the blood and the play of the lungs; but how could we be said to be the subjects of joy or sorrow, of love or envy, or any other purely emotional feeling, unless there were a substratum of intelligence, out of which they might spring? We can, therefore, draw this further conclusion, that though emotions are not ideas, yet ideas are always in some way present whenever they originate; that the one series of states accompanies the other; and that there is an oscillation, as it were, always going on between the ideal and

the emotional form of our mental activity, whenever feeling comes prominently into play.

If we summon up our powers of memory, and try to recall what passed within us at periods when we have been the subjects of strong emotional feelings, we shall, I think, recognize something of the following nature. The emotional state commenced with seeing, hearing, or in some way coming to the knowledge of a fact, which affects our personal interests ; it took its rise therefore not from a single idea, but from a complex intellectual process—from a consciousness of the relation which some event holds directly to our own welfare, or (what is the same thing) to the power it possesses of producing in us an agreeable or disagreeable condition of mind. This is obviously the case whenever we feel fear, or joy, or grief, or expectation, &c. None of these or similar emotions could arise without the knowledge or belief of a fact, and without the consciousness of this fact having some relation to our happiness or unhappiness, pleasure or pain, either in the present, the past, or the future. This is the starting point of the phenomenon ; but when this complex intellectual process, to which we allude, lies, as it were, outside of and apart from the emotion itself, so soon as the emotion begins to rise and swell, we are conscious of a number of cognate ideas chasing each other in rapid succession through the mind, and ever and anon bring back some central idea, around which all the others seem to cluster. Suppose we are going to submit to some painful operation, or experience some other event, to which we look forward with fear, dread, and dismay. What does our past experience testify as to the kind of mental process which goes on ? We find, if I mistake not, that the mind cannot fix its attention on any one point. It wanders over all the circumstances attending the dreaded event. Ideas and imaginations succeed in rapid course,—there is a coming and a going, a struggle and a tension, amongst them. No sooner is one

uppermost than another seizes upon the fancy, and all circulate in perpetual unrest around a central point, in which the whole of the fear or dread seems to be concentrated. The same phenomenon is observable in all the other kinds of emotion, in joy, expectation, love, hatred, envy, revenge, &c. ; in every case alike there is the same struggle and tension of ideas, and the same restlessness and impetuosity in their passage through the consciousness.

We can advance, then, now one step further, in our analysis, and remark that the emotions do not necessarily depend upon the special matter of our ideas, but that they do greatly depend upon the precise manner in which those ideas come and go, and struggle together, and pursue each other through the mind. This conclusion may be easily tested by any number of individual cases. Thus, expectation does not in the slightest degree depend upon the speciality of the thing expected. A hundred or thousand different ideas, or rather intellectual processes, may give rise to it ; but in every case there is this point of uniformity, that the mind is in a state of tension between the present and the future—between the present in which we are and the future in which we wish to be. And this state of tension is produced, as we just showed, by the struggle of certain ideas to be uppermost ; by the forcible attempt to repress the present and to realize the future ; and by the vigour with which both in succession maintain their hold upon the consciousness of the moment. In like manner remorse arises from the tension between the present and the past, *i.e.*, between the moral state of the moment and the contrary memories of the time gone by, which will not harmonize, but struggle against each other to possess the consciousness and determine the state of the will. We need not go through a number of separate instances to illustrate the point on which we are now insisting. In most cases it will be found that the emotive condition is connected not with the special matter of the ideas, which give rise to it,

but to the mode in which they flow through the consciousness. In other words, it arises from the tension of our ideas, according as they bear upon our interests, whether for good or evil.

Now let us translate this explanation into the technical language of mental physiology, as we have explained it in the former parts of this work. According to this view of our mental nature and development, every individual experience leaves a residuum which is free either to remain separately in the mind, as a distinct tendency, or to blend with other similar residua ; or, lastly, to enter into combination with dissimilar ones, and thus form associations of ideas. These residua, we say, are subject to mutual actions and reactions ; and when any one succeeds in maintaining itself against all opposing forces, and in thus occupying and filling the consciousness of the moment, we are said to recall the idea, of which it was previously merely the relic. This whole theory (if theory indeed it should be called) supposes a large amount of activity to underlie the consciousness ; for in speaking of the struggle of residua one against the other, or of their mutual blendings and combinations, we are pointing out processes of which we merely see the results in the changes which silently take place in our thoughts and associations ; just as we know nothing of the process of nerve-formation in the body, but find out only the results by increased power and facility in the organs.

At the same time, there is no reason why this internal struggle of residua should be wholly unaccompanied by consciousness ; the most obvious conclusion we should come to from the nature of the case is, that in instances where the struggle and tension become violent, we ought to become conscious of it as an internal state ; and that the residua themselves which are engaged in this strife would pass rapidly in and out of consciousness, according as the one or the other obtained a temporary predominance in the mind. Employing, there-

fore, this phraseology, we should explain emotion to be the consciousness we possess of the internal tension or struggle of our mental residua, as occasioned by the knowledge we gain of circumstances which directly affect us either for good or evil.

And this brings us to the next point—namely, the relation which emotion bears to the will. In all the intellectual processes, of whatever kind, the mind's chief attention is fixed upon the object; in the case of the emotions, the object is lost sight of, and the direct material which occupies the consciousness is, the various states and affections of the subjects. In other words, when we are the subjects of any kind of feeling, we no longer look out of ourselves, but inwardly at our own being. And as it is with the various phases of pleasure and pain, of the agreeable and the disagreeable, that the emotions are directly conversant, what we have particularly in view, is our well-being on the one side, and our ill-being on the other.

This statement of the case will become more clear if we consider what pleasure and pain are—what they arise from, and what they indicate. The theory of pleasure and pain has occupied the attention of psychologists from the earliest times, and has more especially been treated by Aristotle amongst the ancients, by Kant amongst the moderns, and, more recently, in our own country, by Sir W. Hamilton. The view taken by all these mental analysts is fundamentally the same. It starts with the almost obvious statement, that life consists in the development of a certain system of energies. So long as these energies are in full play, life is in full vigour; so soon as anything occurs to diminish their force or impede their progress, then health is lost, and death will eventually ensue. Whatever, then, tends to keep up the vital energies to a proper state of tension produces a feeling which we call pleasure; and whatever tends either to resist and impede them, or to drive them to excess, produces

a feeling which we call pain. Thus, nutritious food, fresh air, cheerful society, everything that promotes bodily health, is accompanied with a feeling of enjoyment; on the contrary, deleterious food, bad air, disease of any kind, mutilations of, or injuries to, the bodily system, and everything which interferes with the play of the vital forces, either generally or locally, is accompanied with pain. The taking of stimulating drinks is at first accompanied with pleasure, because it excites the vital force; but it is afterwards followed by pain, because it over-stimulates them, and thus at last produces injury. Hence, then, pleasure is connected with a state of well-being, and pain with a state of ill-being; and the feelings which we term pleasure and pain are simply the consciousness we possess of the particular physical and organic condition in which we are for the time existing.

Now, pleasure and pain, as affecting the organism, is the direct analogue of the agreeable and the disagreeable as felt in the purely mental emotions; and the cause of the latter is precisely similar to that of the former. Life in the higher sense—the life of the soul—consists in the development of a system of mental energies. All our happiness is derived from the proper and adequate play of these energies; unhappiness arises, on the other hand, either if they are deprived of excitement, or over-stimulated to weariness and excess.

Those facts, events, or ideas, which, when brought home to the consciousness, tend to stimulate the mental energies in a healthy and adequate manner, give rise to what we term pleasurable emotions; those, on the other hand, which tend to depress the mental energies, or to over-stimulate them, give rise to what we term painful emotions. Hence, as before, the two different kinds of emotions are simply the consciousness of our mental well-being or our mental ill-being; and both the one and the other are evinced by the hurried, irregular, and spasmotic flow of our ideas, or, rather, the residua of our ideas, through the consciousness. Just as

the quickened pulse, irregular circulation, and spasmodic efforts of the vital powers indicate an exceptionally pleasurable or a painful state of the bodily organization ; so does the irregular and extraordinary flow of the mental life, of the current of ideas through the consciousness, indicate emotive conditions, in which we are either exhilarated by what is agreeable, on the one side, or weighed down by what is disagreeable, on the other.

From these considerations, we see that the feelings occupy a middle position between the intellect and the will. The ideas of the intellect, as such, have no direct tendency to influence the will. They are simply mental representations, or abstractions, which occupy the consciousness of the moment contemplatively, and then pass away to make room for others of the same kind. But many ideas, or combinations of ideas, are representations of facts which stand in close relation to our own interests. Thus, the death of an individual, as a mere thought, does not necessarily affect us in any other way than by the mere presentation of the fact to the consciousness. But the fact may involve very much more than it actually affirms. It may involve trouble, anxiety, poverty, the rupture of old associations, the crushing of tender affections, the vacuity and desolation of a life robbed of one of its greatest sources of enjoyment. All these things bear directly upon our own being, both bodily and mental ; and the consciousness of this causes a rapid flow of ideas through the mind, a struggle and tension in our thoughts, which appears in the form of some emotion—it may be grief, sorrow, despair—according to the particular kind of interests which are affected and disturbed.

Nothing is more common than to see men entertaining ideas in the consciousness, at one time, with the most perfect indifference, while at another time those same ideas excite the most lively emotions. In the one case the idea comes and goes merely as a contemplative state, in the

other case it is seen in connexion with their own being, and as affecting their own interests. So soon as this is the case, a corresponding emotion, either pleasurable or painful, is generated. This emotion excites desire, and desire moves the will to action. The feelings, accordingly, form the intermediate machinery through which the intellectual nature operates upon the volitional. In the ordinary course of human life, the extent to which the representations that pass through the mind affect our interests is so small, that we are not even conscious of the emotions which they excite. Yet it is true that we hardly experience a perception or an idea which does not excite some minute amount of pleasure or the reverse. This is, in fact, the unobserved machinery which determines the little multitudinous volitional acts of which our practical life mainly consists. It is only when the interests involved are more than usually close or weighty, that emotions, in the more ordinary sense, are excited, and the will is more powerfully affected.

We may now, then, in conclusion, sum up the doctrine of this chapter in a few consecutive observations :—

1. The emotions are fundamentally different from ideas, and cannot be brought under the same definition.

2. But still they are so far related to ideas that, if we had no ideas, we could have no emotions, in the higher sense of the word.

3. Emotion depends on the tension of our ideas, *i.e.*, on the special mode in which the residua affect each other, and pass in and out of the consciousness.

4. The material of our ideas does not necessarily enter into the process by which our emotions are originated, although there may be emotions which only originate in connexion with ideas of a certain class. (This will be further illustrated in the next chapter.)

5. The tension in our ideas is ordinarily accompanied with pleasure or pain.

6. Pleasure arises when the vital energies are brought into full and adequate play ; pain, when they are either checked or over-stimulated.

7. In the case of the emotions, properly so called, the ideas from which they spring give birth to a pleasurable or painful feeling according as they are seen to affect our interests, personal or relative.

8. Each kind of emotion, besides being ordinarily pleasurable or painful, possesses also a speciality of its own, which arises from the peculiar modification, which it indicates, of our common sensibility.

9. The emotions are the intermediate agencies through which the intellect acts upon the will ; and thus it is that they mainly govern our practical life.

CHAPTER III.

ON THE CLASSIFICATION OF THE FEELINGS.

THERE is, perhaps, no psychological question which has been so variably and so indefinitely treated as that which relates to the classification of the emotions. The multiplicity and heterogeneousness of the phenomena appear fairly to have baffled most of our mental analysts, so that, even to the present day, the problem remains to a large extent unsolved,—how, or according to what principles, it is that they can be most conveniently arranged into a definite system.

Dr Reid, who certainly took a broad and comprehensive view of this, as of most other subjects, divided the whole of our active principles, as he terms them, into three great classes :—

I. *Mechanical Principles of Action*,
such as instinct, and habit.

II. *Animal Principles of Action*,
including all the appetites, desires, passions, affections, and dispositions.

III. *Rational Principles of Action*,
including regard to our own good, the sense of duty, and all the other motives which can be attributed either to rational or moral considerations.

There is this excellence in Dr Reid's classification, that it lays down three very distinct and valid categories, namely, first, principles of action, which are purely reflex and mechanical in their nature; secondly, principles above these, which we possess in common with the lower animals; and, thirdly, principles to which the higher nature of man alone is accessible. The whole idea of this division, however, proceeds upon a defective analysis. It makes no distinction whatever between volitional acts and emotions, but, taking the motive to the act, and the act itself, as belonging to one and the same class of phenomena, it proceeds to classify all those complex states which are made up of emotion and volition combined into the three kinds above indicated, and then leaves the whole question standing in this half-analyzed state. It is needless to say that no satisfactory classification of the feelings, as separate phenomena, can be derived from this principle.

Brown's classification is much more minute and circumstantial than Reid's. It starts on the principle that the emotions are excited either by objects which are at the moment present to us, or which we look back upon in the past, or which we look forward to in the future. Hence he divides them into,—

I. *Immediate Emotions*,

such as wonder, joy, cheerfulness, languor, beauty, sublimity, the ludicrous, &c.; also, the varied feelings of love, hate, sympathy, virtue, vice, and so on.

II. *Retrospective Emotions*,

such as anger and gratitude, if relating to others; regret and gladness, if relating to ourselves.

III. *Prospective Emotions*,

including all the desires and the fears, together with hope, expectation, and anticipation.

The first and most obvious objection which presents itself to this arrangement is the impossibility of keeping the parts of division distinct. For example, the moral element runs through many of the feelings relating both to the present, past, and future ; so that Brown is obliged to subdivide each class over again, according as it possesses a moral element in it or not. We have, accordingly, two principles of classification jumbled together, and the result arrived at is anything but satisfactory to those who look for one clear and definite principle of division, under which all the phenomena of the case may be logically summed up.

Reid's classification takes the kind of faculty with which the different principles of action stand in connexion, as the ground of the classification. Brown assumes the element of time as his basis—an element far too artificial to be put so much in the foreground, although it might properly be made the basis of some of the minor subdivisions.

M. Garnier, the author of an extended work on the faculties of the mind, classifies the emotions under the title of inclinations according to the objects to which they relate, viz. :—

1. Inclinations which relate to ourselves ;
2. Inclinations which relate to our fellow-creatures ; and,
3. Inclinations which relate to things, and not to persons.

This classification is evidently more adapted to summarize the desires and passions than the feelings. The peculiarities of those special emotions, indeed, which do not involve any kind of inclination are not at all taken into account, and the entire view of the case is altogether defective.

Sir William Hamilton's classification of the feelings is far more complete. We may tabulate it briefly as follows :—

I. *Sensational Feelings.*

1. Those which accompany the organs of sense.
2. The coësthesia, or common sensibility, as heat, cold, shuddering, feeling of health, lassitude, &c.

II. *The Mental or Internal Feelings.*

1. Contemplative.

- a. Those attending the subsidiary faculties.
- b. Those attending the elaborative faculties.

2. Practical.

- a. Pathological.
- b. Moral.

If we turn to the German school of psychology, we find a considerable number of attempts at classifying the emotions, accompanied often with an acknowledgment of the great difficulty of the problem.

Kant, to whom we are indebted for the first clear separation of the feelings from the other mental phenomena, takes the two facts of pleasure and pain as the great fundamental distinction subsisting between them. But pleasure and pain may be felt in connexion, 1st, with the sensational life; or, 2ndly, with the intellectual life, of man.

I. If gratification is communicated through the senses, the result is pleasure, properly so called; if through the imagination, then it gives rise to the pleasures of taste.

II. Gratification communicated through the intellect may spring, 1st, from clear representative notions; or, 2ndly, from ideals. In the first case we have the moral; and, in the second, the higher æsthetic feelings.

This classification has the merit of bringing the real fundamental characteristics of our emotional life into prominence; but it is not carried out into the details which are necessary, in order to show how the principle of division thus adopted can be applied to all the individual forms which our feelings assume.

The most complete classification of the feelings which I have been able to find amongst the German psychologists is that proposed by Professor Schleidler, under the article

“Gefühl,” in Ersch and Gruber’s *Encyclopædia*. It is as follows:—

I. *Sense-feeling.*

A. The feelings accompanying the general sense of bodily existence; as, *e.g.*, those of health, or weakness, of general well-being, or general depression, hunger, thirst, satiety, &c.

B. Organic feelings; *i.e.*, the various kinds and degrees of pleasure and pain attached to the exercise of the special senses.

C. Feelings of the inner sense; as joy or low spirits, contentment or discontent; all the various emotions which are attached to the word temper.

II. *Feelings connected with Ideas.*

1. When the ideas are prompted by the senses; as in disgust, fellow feeling with pain, &c.

2. When the ideas are prompted by the imagination, *e.g.*, hope and fear, in all their modifications.

3. When the ideas are prompted by the understanding, *e.g.*, shame, reproach, repentance, &c.

4. The lower æsthetic feelings, as the sense of physical beauty, or the reverse.

III. *Intellectual Feelings.*

1. Pleasure in acquiring knowledge, as also pain arising from idleness.

2. Pleasure in the mere exercise of the intellectual faculties, *i.e.*, pleasures, such as those we derive from—

- a. Novelty.
- b. System and unity.
- c. Order and arrangement.
- d. Relation and symmetry.
- e. Harmony and rhythm.
- f. The simple and the complex.
- g. Wit and humour.
- h. The comic and the ridiculous.

IV. *Rational Feelings.*

- A. Truth-feeling (Wahrheits-gefühl).
- B. Æsthetic feelings, in the higher sense.
- C. Moral feelings.
- D. Feeling of right.
- E. Sympathetic feelings.
- F. Religious feelings.

The passions are regarded according to this system merely as intensified feelings, and are classified, therefore, exactly on the same principle.

This classification has many excellences to recommend it. It proceeds, for example, upon purely subjective and psychological grounds, and the distinctions drawn between the main classes of feelings are by no means either artificial or insignificant. At the same time, it makes the emotions, as such, by far too dependent upon the precise character of the particular intellectual state from which they in each case originate. It lies open, therefore, partly to the very same objection as does the classification of Reid, already referred to. We know for example, that a perception and an idea will, by acting upon some particular part of the brain, call up precisely the same emotion, which shall be followed, too, by precisely the same physical symptoms and results. Thus, a given action, when presented to us through the senses, will produce an emotion—say, of shame, indignation, or disgust, accompanied by all the physical characteristics which ordinarily attend these emotions; but the idea of the action, when vividly presented, will produce the very same feelings, and call forth the very same results in every case. This single instance is sufficient to show us that the real and fundamental character of the emotion does not necessarily depend upon the intellectual antecedent out of which it originated. Such phenomena as impatience or *ennui*, for example, do not depend upon the character of intellectual state which

precedes or accompanies it at all. In whatever way there may arise a conflict between the fact of the present moment and the wishes of the future, the same emotional result will make its appearance, and exhibit the very same mental and bodily characteristics. Admitting, therefore, the validity of the above distinctions in many points of view, we still cannot think that the classification, as a whole, keeps clear of well-grounded objections, or furnishes us with the desideratum so long looked for in this branch of psychology.

In fact, if we go through all the long list of intellectual and rational feelings above given, we can hardly fail to see that they are in all cases mere instances of the general fact of emotional sensibility, only worked upon and modified by the excitant thought. The mental life is naturally stimulated, and the ideas quickened in their movements, whenever certain phenomena, such as those above enumerated, are presented; and this excitation affords us a mental pleasure, which associates itself with the particular phenomena from which it springs.

Without going any further into the history of this problem, let us now attempt to gather up the principal points of resemblance and distinction which have been brought forward by psychological writers, and see if they will aid us in understanding aright at least the broader lines of demarcation which separate our feelings from each other, and thus enable us to form a valid classification.

First, let us look at the points of resemblance. The great characteristics which are common to all the feelings alike are—

1. Their subjective character. In this they differ from the intellectual processes. Every definite intellectual process has an object external to self, to which the whole of the mental activity is directed. In the feelings, no such external object necessarily exists; but we are especially occupied with our subjective conditions.

2. Their relative indistinctness. An idea may be defined, explained, and made perfectly clear to ourselves or to others. Not so a feeling. This is indistinct in its character, inexplicable to one who has not experienced it, and incapable of being wholly conveyed through the medium of words.

3. Their varying intensity. This depends on the circumstances under which the feeling is produced. Where the vital energies are strongly stimulated, or strongly repressed, a proportional intensity will be manifest in the corresponding feelings; where they are weakly stimulated, or feebly repressed, the intensity will be proportionably diminished.

These characteristics, however, are purely negative. They simply tell us that emotion is a mental state, which results in no external object which is indistinct in its character, which is not of any particular degree of intensity. So infinitely varied are the phenomena which the emotions include, that some, indeed, have despaired of ever arriving at anything more than a merely negative definition, and have contented themselves with this without any further research.

It may help us, however, to go a step further, if we look next at the various points of distinction which have been recognized as existing amongst the different emotions of which we are the subject. We may mention—

1. The distinction of pleasure and pain. These are two phenomena which run more or less through the whole of this class of our mental states. Every emotion of a pleasurable nature seems to have one of a painful kind precisely answering to it. For this very reason, the facts of pleasure and pain go very little way in aiding us to form a correct and complete analysis. They seem to be simply two sides of the same mental fact, and represent the positive and negative pole in every case.

2. A second recognized distinction is that of time. Some emotions spring up from the circumstances of the moment; others have their cause in the past; and others, again, look

forward to the future. This is a point which is fully available in the minor subdivisions of the feelings, but does not lie so deep at their foundation as to be the great turning-point on which a general classification should be formed.

3. A third distinction is the person or object to which the emotion relates, *i.e.*, whether to ourselves, or to others, or to the objects of inanimate nature around us.

4. A fourth distinction is the faculty, or region of intellectual activity, out of which the emotion springs, *i.e.*, whether it is connected with the senses, with the ideas, with certain processes of thought, or with the higher conclusions of the reason.

Classifications of the feelings, as we have seen, may easily be formed on the basis of these various distinctions; but in every case they bear an artificial character, and the parts of division do not run perfectly clear of each other. There is one other great point of distinction, however, that has been noticed by several of the more recent German psychologists, and which appears to me to be, at the same time, valid and thorough-going. We possess a large class of emotions which do not depend in the smallest degree upon the kind of ideas which stand in connexion with them, but simply upon the mode in which those ideas flow in and out of the consciousness. Thus, the feelings of expectation, of doubt, of restlessness, of impatience, of ennui, of weariness, of amusement, of contrast, and many more, have no connexion whatever with the matter of our ideas, but arise simply from the mode in which they operate within the mind. On the other hand, there is a large class of feelings which only originate in connexion with ideas or mental processes of a particular nature. This is the case with the aesthetic feelings, whether those which are communicated through the eye or through the ear; with the moral feelings in all their varieties; with the sympathetic feelings; and with the feelings which accompany the appreciation of truth (*Wahrheits gefühl*).

This great twofold distinction appears to me to be fundamental and vital. It touches the real differences which exist in our emotions, and forms the basis of a double classification, which has something more than a mere artificial value. Starting, then, with this principle in the foreground, we propose the following classification, which is, perhaps, as complete as our present knowledge of psychological processes will admit of:—

I. Feelings which depend solely on the flow of our ideas through the consciousness.

1. Those dependent on bodily causes; as,

Health, vigour, high spirits, on the one side; or weakness languor, low spirits, on the other.

2. Those dependent on mental causes; as,

Expectation, satisfaction, entertainment, on the one side or disappointment, ennui, doubt, patience, weariness of mind on the other.

II. Feelings which stand in connexion with the nature and material of the ideas themselves.

A. Those which stand in connexion with the contemplation of natural phenomena, or æsthetic feelings.

B. Those which stand in connexion with the contemplation of our fellow-men, or sympathetic feelings.

C. Those which stand in connexion with the human action, or moral feelings.

D. Those which stand in connexion with truth and destiny or religious feelings.

Into these we shall enter somewhat more minutely in the two following chapters.

CHAPTER IV.

FEELINGS WHICH ARE INDEPENDENT OF ANY SPECIAL CLASS OF IDEAS.

THE first of the two great divisions into which we have separated the whole of our emotional phenomena comprehends those which are in no way dependent on the nature or characteristics of the ideas from which they spring. In all cases, for example, such as those in which we experience expectation, doubt, ennui, cheerfulness of temper, weariness of mind, &c., the material of the ideas with which we are occupied is indifferent; the cause of them lies wholly in the manner in which those ideas flow through the consciousness. We might term them, accordingly, subjective emotions, in contradistinction to those which are modified by the nature of the corresponding ideas, and which might be properly termed objective emotions. Or, again, as these particular emotions depend on the form in which the ideas recur, they might be termed formal; while the others, as partaking somewhat of the matter of the ideas, could in this case be termed material.

To show the nature and origin of this class of emotions, we must revert to the explanations given in the last chapter but one. We there saw that all those circumstances affecting our feelings, which stimulate the mental forces, cause a more rapid circulation of ideas through the mind, and that the consciousness we have of the struggle or tension which thus sets in in a favourable direction is accompanied by a

pleasurable emotion. On the contrary, circumstances which depress the mental forces give rise to a tension of an opposite character,—one that produces a feeling of repression, a sense of being checked and thwarted, and thus lead to a variety of emotions which are painful, or, at any rate, disagreeable.

The causes of these varied changes in the flow of our ideas may lie either in bodily, or in purely mental influences ; and on this fact we may ground a twofold subdivision of this subjective class of emotions,—distinguishing them, that is, according as they spring from circumstances which primarily affect us through the body, or from circumstances which immediately affect the mind.

A. We shall consider, first, those emotions of a subjective character which are dependent on bodily causes.

This class of feelings, though truly emotional, yet lies next to those mere physical phenomena of pleasure and pain which result from the well or ill-being of the nervous system. They are not, properly speaking, physical in their nature, inasmuch as they presuppose certain mental influences, and the disturbance of the regular, ordinary flow of our ideas ; but this disturbance may be occasioned by external and natural causes. In a word, they flow from anything whatever of an external character which effects, pleasantly or unpleasantly, our coenæsthesia, or common-sensibility. Dr Noble has thus appositely described this class of feelings, in the work before alluded to :—

“Under ordinary circumstances this peculiar mode of consciousness [viz., the coenæsthesia] is recognized as tranquil contentment. When it is gratefully exalted, we are said to be in capital spirits, glad at heart, joyous ; we are ready for anything—in high feather. When it is painfully depressed, we are anxious, low-spirited, dull, and heavy ; we have no heart for exertion, we are thoroughly down. And, of course, there are states intermediate, which vary both in kind and degree. These modifications may be determined by causes chiefly

physical, or by causes which, in their origin, are altogether psychical. All persons have their spirits more or less acted upon by conditions of the atmosphere, and by states of the viscera. Go back in memory to the damp, foggy days of dark November, and recall the dispiriting influence of their desolation and gloom. The relation between visceral conditions and the feelings is the theme of perpetual recognition. Witness the importance of a sound digestion, and a healthy state of the liver, to the maintenance of moral contentment" (*op. cit.* pp. 61, 2).

The psychological fact involved in this very accurate description is this, that whatever tends to stimulate healthily and adequately the physical powers, reacts upon the mind. The ideas flow more rapidly; the struggle they enter into with one another to find due recognition and expression is accompanied by a pleasing elevation of the *coenæsthesia*, or common-sensibility; and we are then said to have the feelings of health, vigour, high spirits, and all the associated phenomena. In whatever way the mind is affected, and the flow of our conscious life quickened and stimulated by pleasant bodily sensations, whether from without or from within, we may be said to be the subjects of pleasurable emotions, dependent on bodily causes, and arising from the excitation of the vital energies.

Exactly in the same way, whatever tends to depress the vital functions has also a reflex mental influence, and gives rise to an inward tension and resistance which comes into consciousness under the form of various disagreeable feelings, and a depression of the common sensibility.* Here, then, we have two series of emotional phenomena, which present themselves to us as merely modifications and temporary

* In many ailments there is a certain absence of emotion—a paralysis of the *coenæsthesia*—even when the intellect is clear. This occurs when the bodily state produces a mental condition of perfect indifference to everything around.

affections of the cœnæsthesia. Particular affections of the nervous system, to which we are exposed either from external or internal causes, react upon the mind, change the flow of our ideas, create a tension in the tone of our conscious life, and thus give rise, on the one hand, of feelings of vigour, lightness, high spirits, joyousness of heart, &c., or, on the other hand, to feelings of mental languor, low spirits, and depression.

B. But, secondly, there are also many emotions of this same subjective character which are dependent on purely mental causes. We may take the phenomenon of expectation as a sort of typal instance of the feelings we are now considering, and the analysis of this will help us to understand all the rest.

Phenomena which present themselves in some regular order or succession to our observation, become associated together in our minds in exactly the same way. Every link in the chain leaves a corresponding residuum; so that, when one is excited and brought into consciousness, the next in the chain immediately appears; and so on in succession, until the whole series has been recalled. Now, when we are put in a position to witness any series of phenomena over again which we have before observed, and every link of which is laid up in the memory, we find that each step, as it appears, will at once awaken the corresponding residuum, which residuum is, of course, at once absorbed in and blended with the physical fact. So the process goes on to the end, every residuum (α) being awakened and then absorbed in the corresponding phenomenon (α') as the series unfolds.

But now we will suppose that the series of events is one which affects our interests, and at the end of which we anticipate some great pleasure or advantage. We may be travelling home, for instance, from a journey. We know the whole road, and feel that, when each successive stage has been passed, and we arrive at the wished-for spot, some friend

will be there to welcome us with tidings of joy and gladness. What is the effect of this position, psychologically, on the trains of thought? The mind, under the stimulus of the hoped-for pleasure, passes over each step in the series faster than the real series actually unfolds; and we are kept in a state of tension by the struggle of the perceptive phenomena, $a', b', c', d', \&c.$, to hold back the corresponding residua, a, b, c, d . Whenever, then, the facts of our perceptive life forcibly restrain the too rapid evolution of the corresponding and associated series of ideas, which are struggling on to their termination, the feeling of expectation arises, negative in itself as regards pleasure or pain, but rendered pleasurable to whatever extent the anticipated end is realized, and painful to whatever extent it is baffled and deceived. Here, accordingly, the whole emotion which we are now considering is seen to arise from the struggle and tension of the ideas which are put into activity, quite independently of the material which these ideas may involve. The pleasure or pain that accompanies a state of expectation is experienced in proportion as the ideas are checked in their flow, on the one hand; or, in proportion as the check is removed, and each excited residuum is confirmed by the corresponding reality, on the other.

The feeling of satisfaction arises in the same way. The residua that are awakened by the circumstances in which we are placed, and thus recalled to consciousness, lead us to anticipate a certain real objective result. So long as the real objective result is not actualized, the mind is held in a state of tension, approaching to a painful expectancy; but so soon as ever the result appears, the tension is relaxed, and a feeling of relief is at once experienced. Perhaps we are performing a delicate experiment. We know already the steps of the process, and the result to which it ought to lead. The mind, accordingly, naturally anticipates the flow of events; it passes over the links in the chain rapidly, and looks to the end. If the result we look for does not, for a

time, appear, a state of mental tension is produced, approaching to a painful condition of expectancy ; but the moment the experiment succeeds, the tension is relaxed, the expectancy ceases, and a feeling of satisfaction ensues.

The feeling of entertainment arises from precisely the reverse process to that of expectancy. In expectancy the ideas flow faster than the facts ; in entertainment the facts flow faster than the ideas. The mind, accordingly, has no time to attend to the flow of its own thoughts, and every residuum which would otherwise struggle for a conscious existence is repressed by some new and unlooked-for circumstance *ab extra*. The rapid succession of new ideas or perceptions thus brought home to us gives a pleasing stimulus to the mental energies, and the result is, that we are held in a tranquil state of emotive enjoyment, forgetful of our own thoughts, and of that lapse of time which they alone reveal to us.

Let us look, next, at the other side of the picture, and enumerate some of those painful or disagreeable states of emotion which are produced by the depression of the mental energies. Amongst these we may mention—

1. The feeling of disappointment. This is precisely the converse of the feeling of satisfaction. The series of ideas which we expect, as they evolve, to be confirmed by the corresponding reality, here fails of such confirmation. The given residua are awakened, and draw the mind to the object of its hopes or wishes ; expectation, accordingly, sets in, and a pleasing state of tension is produced so long as the hope and expectation lasts ; but at length, just when the realization of the ideas should be experienced, the perceptive confirmation fails, and the mental stimulus receives a sudden check, which converts the emotive state from one of hope into the opposite feeling of disappointment.

2. Another of the states of feeling very commonly produced by the particular mode in which the ideas flow

through the consciousness, is that which the French, and we from them, call *ennui*. This is just the reverse of entertainment, and is induced by exactly the opposite causes. In the case of amusement, the novelty and variety of the facts presented to us occupy the attention, so that we have no time to observe the flow of our own ideas. In the case of *ennui*, novelty and variety fail. We are placed in circumstances where there is nothing to excite the attention, and the mind is thrown back entirely upon its own trains of thought. If these trains of thought are sufficiently lively to occupy the consciousness, the feeling of *ennui* is not produced ; but if the circumstances in which we are placed are just sufficient to weaken the trains of thought, while they are not sufficient to excite our attention and interest, a struggle sets in between the outward fact and the internal flow of our thoughts, which has the character of a repressive and painful feeling—the feeling of a disagreeable and helpless vacuity, thwarting to the mental energies, and tending to depress all exertion.

3. The analysis of impatience does not differ very materially from expectation. Here, as before, the ideas flow faster than the realities ; but there is one special point of difference which constitutes the main distinction between the two feelings. In expectation, the mind is fixed chiefly upon some pleasure that is to come ; so much so, that the mental life is stimulated, and the enjoyment derived from the anticipation of that pleasure is greater than the annoyance which arises from the delay of its realization. In impatience, on the contrary, the relative strength of the two feelings is precisely reversed. The mind may be stimulated by the prospect of the desired object, but it is still more forcibly checked and thwarted by the delay. Hence we are held in a state of disagreeable tension, and the pleasure felt in the anticipation is overborne by the restlessness and repression which that delay occasions.

We might go through an indefinite number of different shades of feeling, analogous to those already mentioned ; but the principle already laid down will be amply sufficient to enable any one who attends closely to his train of thought, and the flow of his mental life, to perform the analysis for himself. It is sufficient for our present purpose to have shown the application of the one general truth, viz., that those emotive states, in which no special material of thought is involved, all result from the particular mode in which the ideas pass through the mind, and from the tension which is produced when they are either stimulated or depressed. In this way they come under the great mental law of attraction and repulsion—being either pleasurable or painful, in proportion as the attractive or the repellent force is, for a time, predominant.

CHAPTER V.

FEELINGS WHICH ARE DEPENDENT UPON SPECIAL CLASSES OF IDEAS.

THE class of emotional feelings which we have already considered is entirely independent of the kind of ideas with which the mind may at the time be occupied. They originate simply in the peculiar relation which those ideas hold to the consciousness, and are agreeable or disagreeable in proportion as the temporary flow of mental life is stimulated or depressed.

We come now to the other great class of emotions,—those, namely, which only arise in connexion with certain peculiar kinds of ideas or perceptions. Thus there are certain feelings which we experience only in the contemplation of nature; others which are connected with the aspect of the joy or suffering of our fellow-creatures. There are some, again, which arise from the contemplation of human action, and others, which associate themselves with the contemplation of human truth and human destiny. We may divide this whole class of our emotions accordingly, under the four heads of the æsthetic, the sympathetic, the moral, and the religious emotions.

I. We begin, first, with the æsthetic emotions—those which arise from the contemplation of nature, or its imitation by the artist. And here we must be careful at the outset to separate those feelings which are of a purely nervous or sensational kind from those which have a mental

and strictly æsthetic origin. Thus certain colours and combinations of colours evidently have the property of affecting the nerves in such a way as to produce a pleasant sensation, while others produce a disagreeable one. The same may be said of different classes of sounds. What the agreeableness or disagreeableness may arise from it is not perhaps possible, in the present state of our knowledge, to determine. We know that different colours are produced by vibrations of different degrees of minuteness and velocity, and that sounds are produced in like manner by waves and agitations of the atmosphere. We have reason also to believe that these vibrations, both luminous and sonorous, communicate themselves in some way through the nervous apparatus to the brain. It is reasonable, therefore, to conclude, that agreeable or disagreeable sounds or colours arise from the peculiar character of the vibrations, and the way in which they affect the nervous system; but we can go no further than this at present in our research, and even the conclusion already drawn must still be put forward with a certain amount of hypothetical hesitation.

Separating, then, those phenomena which affect the nervous system sensationnally, as not belonging at all to the religion of æsthetics, we come to the more important fact, that there are certain external phenomena (as those of form, of sound, of grouping, of expression, &c.) which awaken purely mental emotions, quite distinct from any mere sensational stimulus. These emotions include all those which we designate as the feeling of beauty, of harmony, of symmetry, of sublimity, and so on. All such feelings are conditional upon a certain amount of intelligence—that is, in other words, they involve the presence at the time (at least tacitly) of certain ideas; and, like all other emotions, are evidently dependent upon the flow of these ideas through the consciousness.

The natural philosophy of the beautiful and the sublime is a vein of research which has hardly been opened, and which

awaits its fuller development in the future. To a certain point, indeed, we can proceed in the investigation with tolerable certainty. Putting together the kind of objects which excite the emotion of beauty with the knowledge we have of the subjective nature of emotion itself, we can conclude that there must be something in the nature and constitution of the objects termed beautiful, which stimulate the mind, and cause a certain tension and ebullition in the flow of its ideas. We can go even one step further. It seems impossible that mere outward and passive forms should be able to stimulate the flow of our ideas, unless those forms expressed ideas themselves. An outward object, with or without meaning, might produce sensations, and thus stimulate the nervous system; but to awaken the mind, to stimulate the flow of ideas, and kindle a purely mental emotion, there must be something kindred to mind in the object—there must, in fact, be reason visibly embodied in form, or audibly embodied in tones.

Let us take a few examples to illustrate this. A shapeless and unsymmetrical form such as this, produces no feeling of beauty whatever; on the other hand, a purely symmetrical figure (such as a circle, or an ellipse, and, still more, any such form as this, in which we have a number of similar curves all radiating from a common centre), at once produces a feeling of beauty or harmony of parts. In the unsymmetrical figure there is nothing for the mind to employ itself upon—no harmony of parts, no evidence of reason or design in the structure. On the other hand, in the symmetrical figure there is unity and variety combined; the mind, in passing round the surface, is kept in a state of expectancy; and the pleasure it derives from finding its expectations realized, as it passes round from one curve to another, appears to constitute one element at least in the sense of beauty which it evokes. The more elaborate the



figure is, so long as we can keep the whole idea of it as a perfect unity in the mind, the more is the mental expectancy stimulated, and the more is it eventually satisfied. Hence complex forms give a greater sense of beauty than perfectly simple ones. There is more mind embodied in them ; the tension we experience in balancing all its parts is greater ; and the consequent emotion of beauty is more vivid. The same principle may be seen to exist in the beauty which we appreciate by the ear. Confused unrhythrical sounds give no sense of beauty. On the contrary, the moment the element of rhythm or measure is introduced, the mind is arrested, and its expectancy excited. We look for a repetition of the same rhythm, and experience a sense of satisfaction when it comes. In proportion as the melody becomes more complicated, the tension of mind with which we listen to it is greater ; and, so long as the unity is not lost, our sense of its beauty proportionally increases.

The element of harmony enhances the effect tenfold. Those intervals are known to be most harmonious which stand to each other in the relation of simple numbers (the octave, *e.g.*, as 1 to 2, the fifth as 2 to 3, &c.) ; those tones, on the contrary, between which there is no definite ratio, are discordant. The tension produced in our minds by harmony, moreover, is increased by the complication of the chords, and by their threatening confusion, followed by a successful resolution. All this shows us the same principle at work—the fact, namely, that there must be mind expressed, in the one case, in the form,—in the other case, in the tone ; and that the feeling produced in us is greater the more complicated the forms or tones become, so long as the clue to the whole idea is not lost sight of, and the unity perfectly preserved in the midst of all the variety.

If we pass on to objects of natural beauty, such as the animal or the human form, the same fundamental truths lie at the basis of all the æsthetic emotions which they also

excite. They, too, must be expressive of certain ideas, producing a state of mental tension while we are inwardly following them out, as there expressed; and the feeling of satisfaction which follows from the expectation excited in us being realized, is here also the ground of our æsthetic pleasure. Thus, in contemplating a perfect statue such as that of the Apollo Belvidere, a number of ideas imperceptibly arise, and struggle to occupy the consciousness of the moment. The figure suggests strength, health, vigour, activity, power, intelligence, capacity of thought and action. In like manner, a beautiful painting, like that of the Sextine Madonna, calls up all the perfections of the female nature—simplicity, purity, love, wonder, reverence, earnestness, and joy. All these and many more ideas rush into the mind at the moment the object is presented, and both stimulate the expectation and satisfy it. It is this tension which we experience, and the pleasure we have in finding every idea fully realized, which seems to create the sense of the beautiful in connexion with objects of high art, such as those above mentioned. It is not my object, of course, to enter minutely into the subject of æsthetics externally considered; all I proposed was to hint at the psychological theory by which the emotions of beauty may be accounted for. It must be readily admitted, however, that the mode in which forms and tones work upon the mind, and produce the sentiments of beauty, grandeur, sublimity, &c., is but very imperfectly known. If the above theory, however, be confirmed by closer observation, the pathway seems opened by which a natural history of the sublime and beautiful may be eventually elaborated and established.

II. We come next to those emotions which arise from the contemplation of our fellow-creatures, viz., the sympathetic and antipathetic.

The sympathetic feelings arise from the principle already established, that a sensation, and the idea of a sensation have

the power of producing one and the same effect upon the volitional and emotional centres. This is true even with regard to bodily feelings and their physical results. The taste of some nauseous substance will produce the feeling of nausea, and the corresponding physical results upon the stomach; the idea of the thing, if vividly realized, will produce precisely the same consequences.

The sympathetic emotions are a direct instance of the working of this principle in relation to the joys or sorrows of our fellow-creatures. When we have before us the aspect of a fellow-man in a position which involves intense pleasure or pain, physical or mental, we know from our own experience what his feelings are likely to be. He has the reality, we have the reflexion: he has the direct feeling arising from the outward circumstances in which he is placed; we have a similar feeling arising from the idea which the aspect of the case presents to our minds.

The relationship of these two parallel series of phenomena to each other can be easily traced out by looking at their respective origin. If the sympathy have reference to bodily pain, then, in the case of the sufferer, we have presented to us the actual feeling which arises from the arresting and disturbing of some of the vital energies. In the same case of the sympathizer, we have a strong reflexion of this same nervous disturbance, arising from a vivid idea of the suffering endured. If the sympathy arise from mental suffering, then, in the case of the sufferer, we have a strong tension and ebullition of ideas, adverse to the natural and healthy play of our mental life. In the sympathizer we have a similar tension and ebullition arising from the contemplation of this emotive state in the other.

It is not always the case, however, that the sight of another's sorrow or joy excites a similar sympathetic emotion in our own bosoms. Sometimes other considerations, of a selfish nature, will interfere with the natural development of

sympathy. If we have a strong emotion of enmity against the person whom we see suffer, sympathy will be sometimes changed into malice ; or, if the person is elated by a joy which we do not possess, it will very likely become envy. Every turn in the change of relationship will produce a different shade, either of sympathy or antipathy, which alone is sufficient to show us how entirely the whole character of these feelings is dependent upon the mode in which the ideas occupy and affect the consciousness.

III. The third variety of these special objective emotions include those which arise from the contemplation of human action ; we term them the moral feelings.

There are two main questions with which moral philosophy has chiefly to do. These are, first, the nature and ground of virtue ; and, secondly, the mental faculty with which we apprehend it, or, in other words, the constitution of the human conscience. The first of these questions is a purely subjective and metaphysical one ; the second belongs strictly to the department of psychology.

Various terms have been employed by psychologists to denote the moral faculty. It has been termed conscience, and moral sense, moral judgment, moral approbation and disapprobation, moral feeling, moral sentiments ; and other terms might, no doubt, be found amongst ethical writers to mean the same thing. The analysis already gone through in the former chapters will go far to aid us in putting this question of the human conscience upon its right psychological basis. First of all, we have shown that there can be no true emotions without ideas ; consequently, there can be no distinctively moral emotions without distinctively moral ideas. The term "moral sense" is, so far, inconvenient and inaccurate, inasmuch as it seems to imply that we have moral perceptions coming to us at once, from without, like the perception of external objects, without any mental operation in which they are grounded. The moral feelings, we

should remember, do not follow the analogy of the bodily senses, but they follow the analogy of the emotions, and have their root in the ideas and distinctions we form in reference to moral good and evil.

If it be next asked, "How are our moral ideas formed?" then the psychology of the ideas generally furnishes the material for a reply. All thinking is differentiation. It is by noting the resemblances and the differences of things that they are formed into classes, give rise to ideas and concepts, and are fitted for the purpose of logical argumentation or rational inquiry into truth.

Moral ideas, like all others, are formed in this way. We do not start with any *a priori* notion of an absolute good or an absolute right; this is rather the goal to which our moral thought tends as its highest expression. Every man forms his ideas of good and evil from the phenomena around him. He learns gradually to separate actions which have any kind of moral element in them from others which have not; and, in the same way, he comes, by a like gradual process, to divide them into the two classes of right and wrong. That this is the mode in which our moral ideas are formed is confirmed by the fact, that there is no positive standard of morals anywhere to be found. Men in a low and barbarous state of civilization have the more elementary and inadequate moral ideas; and, even amongst civilized nations, we find that the moral standard is by no means uniform. Special virtues and vices take a very different rank in one country from what they do in another. Amongst barbarians, actions are mostly counted right or wrong according as they conduce to their immediate happiness or misery. Amongst children, actions are estimated according to the authority to which they have been taught to submit. As the mind develops, and the ideas become clearer, actions are viewed successively in relation to the general laws and habits of society; then, according as they coincide with the more universal verdicts of

human judgment ; and, lastly, according as they conform to an ideal perfection, which we attribute to the Deity alone.

Now, the moral emotions are natural consequents upon the formation and existence in the mind of moral ideas. An action is preformed which is adjudged, according to the moral conceptions we have formed, to be strikingly right or strikingly wrong. Were it a mere matter of judgment that we were called upon to pronounce, we should quietly distribute such actions to their respective categories, and the thing would end there. But human life is composed of human interests, and these interests are affected by every moral or immoral action. We are consequently not satisfied with merely pronouncing a moral judgment ; we feel our moral ideas frequently thrown into commotion ; a state of tension is produced by the actual contact with virtue or vice ; and the result of this tension is an emotion, which we call moral approbation, on the one hand, or moral disapprobation on the other—approbation when the moral life is stimulated and called forth in the direction of virtuous action, and disapprobation when the moral life is checked and wounded by what we are constrained to repel and condemn.

The question, therefore, which moral philosophers have so often asked, and which it pertains to psychology to answer, viz., What is conscience, can now be answered with the requisite degree of scientific accuracy. Conscience is primarily a judgment exercised upon human actions, by which they are classified as right or wrong ; that judgment being necessitated and guided by the whole state of human society in which we are born and educated. Next it consists in a corresponding emotion which arises from the tension of our moral ideas, whenever human interests are seen to be dependent upon human action. Lastly, it consists in the state of will which these emotions produce—impelling us to act in accordance with the ideas we have formed of right and duty. Conscience, therefore, is the union, in one complex

state, of moral ideas, moral emotion, and moral activity ; for the whole of our nature, intellectual, emotional, and volitional, is involved in every act which conscience dictates.

The other question which moral philosophy deals with, viz., What is the ground of virtue? cannot be solved by psychology. We must leave it for the metaphysician to determine what are the qualities in human actions, objectively considered, according to which our judgment separates them into the two great categories of good and evil. Whatever these qualities may be, the mental process involved in our moral life is clear. Thinking is differentiation. Moral thinking is the distinction of human actions as right or wrong; and moral emotion results from the tension produced in the ideas thus formed, according as they, in any individual instance, affect our own welfare or those of mankind at large.

IV. The only class of special emotions left, are those which accompany the contemplation of human truth and human destiny—I mean the religious emotions. We are placed here in the midst of a universe, of which we see and comprehend only an infinitely small portion. The human reason, not satisfied with the knowledge which it is able to acquire, longs to go beyond the region of the known into that of the unknown, and thus to complete, by its own subjective efforts, what cannot be ascertained on clear objective grounds. In the presence of these great problems, the human mind finds out its own weakness and dependence. Interests of infinite moment start up in connexion with the purpose of life—the destiny to which it tends—the eternal future—and the infinite power on which the whole reposes. The first feeling, then, which naturally arises in the human breast from the tension and struggle of these great ideas, is the feeling of helplessness and dependence. This is the starting-point and foundation of the religious emotions. That which we know becomes a part of the whole mass of scientific truth, and is

removed at once by this very fact out of the region of religious faith or feeling : that which we do not know, and cannot comprehend, but which, nevertheless, stands closely related to our happiness and our destiny, can still become the object of our faith ; and, as such, produces the feeling of helplessness and dependence, from which the religious life, subjectively considered, takes its commencement. As the objects of our faith become clearer to the mind, other feelings mingle up with the first emotion ; love, joy, confidence, hope, all unite their influences as the beneficence and goodness of the Deity are more and more realized in the world without, and the soul within ; and thus that complex state of feeling involving humility, awe, veneration, love, gratitude, joy, in the presence of the Infinite and Eternal, is gradually evolved, which we term religious feelings.

If the ideas we form of the Infinite, and our relations to it are dark, gloomy, and oppressive, the feelings take a similar hue, and religious gloom, melancholy, and even despair may possess the mind when crushed under the sense of its present dependence, and the darkness which the future presents.

Here, however, as in the case of the æsthetic and moral feelings, we can only glance at the psychological basis out of which they spring. To follow these various questions up into all their details would require a separate treatise on the philosophy of æsthetics, morals, and religion.

CHAPTER VI.

ON THE DESIRES AND PASSIONS.

In the two last parts of this volume a broad distinction has been drawn between volition and feeling, and their respective developments. Volition springs primarily out of the motor system. Here the original source of active power lies concealed; and, although it is exerted at first unconsciously and mechanically, yet it becomes gradually transformed, as the mind unfolds, into a conscious and voluntary activity. Feeling, on the other hand, springs out of the sensory system; commencing in the fundamental fact of common sensibility, and then varying according to the subsequent development of the intellectual faculties, and the tension of ideas to which we are thus subjected.

We come next to consider a cognate series of mental facts, which play a very large part in our mental economy,—I mean those included under what we term the desires and passions. We feel, at first, somewhat at a loss to determine under what precise category these phenomena should be classified. Desire certainly involves feeling of some kind; for it is based on the appreciation of what is good or evil, of worth or worthlessness, of well-being or ill-being. But it also involves volition, because, when we desire a thing we not only feel that it has value or the reverse, but are brought into that active state of mind in reference to it, that we are strongly led to seek for its attainment.

We may conclude, therefore, that desire is a complex state, made up partly of feeling and partly of volition ; in other words, that we are said to desire a thing when our will to attain it is accompanied by a decided feeling of its worth, and not decided merely by an act of reasoning or judgment.

The analysis of desire, as a mental fact, has already been alluded to in the chapter on the Development of Volitional Power. We must enter into it now, however, somewhat more minutely, and attempt to follow it out into those more intensified forms in which we so frequently find it under the name of passion.

All desire commences with a pleasurable feeling of some kind, *i.e.*, in other words, with an excitation more or less strong of the vital forces. This excitation may reside simply in the body, *i.e.*, it may be a mere elevation of our ordinary sensibility ; and the result will then be, desire of the lower or physical kind,—desire for some particular form of sensuous gratification. Or the excitation may be purely mental, proceeding from some object which arouses the intellectual or volitional powers, and causes the mental force to flow with a stronger current through the brain and nervous system. In this case we become the subjects of some of the higher or intellectual desires.

Thus, to give examples, we derive pleasure from the satisfaction of our hunger or thirst by means of appropriate food or drink. Owing to this pleasure, we form a desire which leads to our taking the course which is necessary for its satisfaction. Were we compelled to seek our food simply by an intellectual conviction that it was essential to life and health, we should, no doubt, neglect the precaution in a thousand instances, and suffer in consequence from deprivation. But the desire which grows out of the immediate pleasure of satisfaction acts as a constantly impelling force, and thus leads to the regular supply of the necessities of life.

We derive pleasure, again, from the possession of money

as the means of human comfort ; or of power, as the source of impressing our own will upon others. This pleasure creates an habitual desire in the mind, which is expressed by such terms as acquisitiveness, avarice, ambition, love of power, &c. The pleasurable feeling we receive from such bodily or mental excitants as those above mentioned does not logically involve the desire of them. We may be perfectly satisfied by the pleasure itself, and not look beyond it into the future. The desire is a mental attitude, which grows out of the pleasure, and which may be easily traced in its growth by a little attentive observation.

Let us take the first example above adduced, that of the desire for food. The child finds by a few experiences that the unpleasant feeling he is subject to when hungry is removed, and converted into a positive pleasure, by means of food. Hence, by the simplest principle of mental association, he is led, whenever the want returns, to seek the pleasure which the satisfaction of that want always brings with it. Every time he exerts his motor or volitional system in this direction, *i.e.*, in the attainment of this pleasure, the tendency to repeat it is strengthened ; so that, in process of time, the specific desire for food, and the action following it, connect themselves most intimately with the want, and are aroused by the most distant idea of the pleasure which lies in its satisfaction. Should this tendency to seek pleasure in food become excessive, through want of other interests, or through habitual devotion to the gratification of the senses, it rises almost to a passion, and is termed gluttony or Epicureanism. In the case of the pleasure derived from drinking, there is, in addition to the satisfaction of thirst, a new superadded pleasure, in the exhilaration produced by stimulating liquors, —a pleasure which consists simply in the temporary elevation of the common sensibility. The desire for drink, accordingly, much more easily grows to excess than that of eating ; the elevation of the cœnæsthesia being in itself a great additional

gratification, and, at the same time, producing a temporary oblivion of all that is disagreeable in our ordinary mental or bodily states.

Exactly the same process as that above described takes place in regard to our higher or mental desires. Thus, money supplies a want, and creates a positive mental pleasure by the resources which it opens up to us. Hence we associate the possession of money with the pleasure which we have ordinarily derived from its uses. By degrees the effort we make to secure these advantages grows into a confirmed habit, which strengthens more and more by daily repetition, and at last produces what we term avarice. The steps, accordingly, by which "the desires" are created are now sufficiently obvious. First, there is a feeling of pleasure arising from some elevation of the common sensibility, or of our mental forces; secondly, this pleasure is associated with the object (whatever that may be) which produces it; thirdly, the absence of this pleasure, when expected, leads us to desire the object with which it is associated, and to which we look for its gratification; and, lastly, by the force of repetition, this desire grows up, in extreme cases, into an habitual tendency, which influences the entire character.

Now the passions are not generically different from the desires. In our proper or normal condition reason is the guide by which we are directed in all our actions. Consequently the desires, instead of having the entire control of our activity, ought in their turn to be subjected to the superior control of our rational nature. It should depend upon reason whether the desires we may form in our minds are ultimately approved of, and practically sought after. It often happens, however, that a desire, when long indulged and inordinately pursued, masters the reason, and, regardless of consequences, bends the will to its uncontrollable sway. When any desire has become sufficiently strong to do this, we usually term it a passion. The passions, therefore, are simply intensified and

permanent desires, which more or less decidedly control the reason and the will.

A rough classification of the passions may be made exactly on the same principle as that which we followed in the case of the feelings. Just as there are two great classes of feelings:—first, those which are indefinite and subjective; and, secondly, those which are attached to specific and assignable objects; so, also, are there two similar classes of desires and passions. There are desires and passions which have no definite object, but which consist only in a vague inward longing for physical or mental gratification. And there are also desires and passions (and these are by far the most numerous) which do attach themselves to specific objects, and impel us strongly to their acquisition. On these two classes of passions we shall next bestow a few brief elucidations.

I. The Subjective Passions.

Desire, if it has no specific object towards which it gravitates, can be nothing else than an inward longing or craving for a pleasurable state of existence not at present possessed. This longing may have especial reference either to sensuous gratification or to mental enjoyment. All men desire more or less the gratification of the senses; but a very large portion of them are so engaged in other interests, duties, occupations, or intellectual pursuits, that the search after the pleasures of sense is set aside as something low and unworthy, in comparison with the higher objects which they habitually pursue. In this way, the craving for pleasure more frequently than not is prevented from growing into a passion, and kept wholly subordinate to the reason and the will. In like manner, the desire for mental gratification is also prevented from becoming an overruling passion. The various objects of mental pursuit are in themselves so important, so necessary, or so attractive that the habit of mere intellectual

dilettanteism has some difficulty to attain the character of an overruling impulse.

There are cases, however, in which the inward craving for pleasure, both sensual and mental, does take possession of the whole nature of the man, and becomes the dominant ground of his conduct. There are natures which appear to have an indomitable bent towards the gratification of sense—a bent so strong, that it leads wholly captive both the reason and the will. This bent may not have any special object to which it gravitates, but may be simply a dire necessity for sensuous excitement. The particular direction in which this excitement is sought is various. In some cases it takes the direction of narcotics, such as opium; in others, it employs intoxicating drinks; in others tobacco. Sometimes, again, it breaks out in love of stimulating and delicate food, and too often in lascivious conversation and conduct. It is related of a well-known English writer, greatly addicted to opium-eating, that, when debarred from this pleasure, he would wander through the woods sucking a large stick of Spanish liquorice. The necessity for some kind of sensuous excitement was so strong, that any, even the vulgarest, means at hand were seized upon to satisfy it. The characteristics of this whole temperament are too well known and too frequently exhibited to need any lengthened description. We leave it standing here, in its proper place, designated as one of the most common, most baneful, and most degrading of the passions which afflict our nature—a passion which dignifies itself by no definite pursuit, but which craves simply and solely for sensuous excitement, by whatever avenue such excitement may be procured.

Only next to this in its baneful effects on the character is the passion for mental pleasure, as such, without regard for any particular object of mental pursuit. This may also take a great variety of forms. The love of change, of company, of gossip, of novel-reading, when excessive, may be put down

as examples of this passion. Idle dilettanteism in relation either to literature or art will sometimes degenerate into the mere craving for mental excitement, and thus become a subjective passion of the nature we are now describing.

In fine, the sybarite may be looked upon as a kind of type of this whole character. All pain or toil, whether mental or bodily, is, in his case, to be shunned as an intolerable evil, and pleasure is to be the great aim of life. It little matters by what channels this pleasure is conveyed, or whether it be gained through the gratification of the senses, or through mental amusement; pleasure is, in both cases alike, the passion which has to be gratified, and pain or labour the one great evil which has to be avoided. For these two ends, all the higher purposes of the intellect and all the nobler determinations of the will, with everything that involves self-sacrifice and earnest activity, are repressed and rejected. The moderate desire for pleasure may, indeed, give ornament and cheerfulness to human life; but the passion for it destroys all that is purest and best in human character.

II. *The Objective Passions.*

The objective passions are those which aim at the acquisition of some definite end or object, and are, so far, much easier to be defined and described, inasmuch as their direction is, in each case, perfectly single and uniform. The objects at which they aim are threefold: 1st, self; 2ndly, other men; 3rdly, things, and not persons.

I. Let us look at that whole group of human passions which are purely self-regarding. The tendency to make self the basis of our impulses and actions may have two main directions.

(1) First, we may be devoted to self, as such, and our whole conduct may, in consequence, have regard entirely to the convenience, pleasure, aggrandizement, and development

of our own personality. There is such a thing, indeed, as a natural selfishness implanted within us in the form of a primitive impulse, aiming mainly at our self-preservation. We are all impelled by this instinct to seek our own well-being, and to guard against personal injury ; nay, even to employ the natural means for securing our own physical happiness. Self-preservation, as this fact has been often expressed, is the first law of nature. But selfishness, viewed as a passion, is something wholly different from this. It is not an instinct aiming at our well-being, but an acquired mental tendency, in which the desire for self-indulgence and self-aggrandizement has become by habit and association so strong, as to reign paramount over all the other motives and considerations which go to determine human conduct. Viewed in this light, it is a passion having self alone for its object.

(2) But we may be influenced, not by the love of self, as such, but by the inordinate appreciation of our own worth. This will often lead to a course of conduct wholly different from selfishness in the other sense. A certain amount of self-appreciation and self-respect is one element in every great and noble character ; an excess of this appreciation is what we call pride. Pride is not necessarily self-seeking. So far from this, it is often ready to sacrifice all the comforts of life for the sake of maintaining what it considers the dignity and worth of the individual. When it becomes an overruling passion, however, it leads us unduly to depreciate others, and descends to the littleness of imagining our own worth the sole object for which we have to live and labour.

A noble application of the two passions of selfishness and pride, is the unconquerable love of freedom—a passion in which all that is good in both seems to be combined, without any of the vice which so often attaches itself to them. To love freedom is at the same time to have a due regard to our own interests, and a proper value of our own worth. It may be regarded, therefore, as a passion in the highest degree

conducive to the real progress and improvement of humanity at large.

II. The second group of passions consists of those which have (not ourselves, but) other individuals for their object.

(1) If the desire we experience in reference to others relate directly to their personality it gives rise to love. If we desire inordinately to gain respect, regard, and admiration from others, we term it love of honour, and, under some phases, vanity. Lastly, if we desire to exercise inordinate influence over others, we are said to be animated by the love of power, or ambition.

Of these passions the most powerful and universal is love. The word love, as used in common life, is extremely indefinite. We love an old tree or a fine ruin ; we love mankind at large ; we love our mother and our friend ; and we love, most of all, the person selected to be the one companion of our life joys and sorrows. But we see, at once, that the term love, as implied in these cases, is used in extremely different senses and intensities. The love we bear to inanimate objects is rather a pleasing association or an æsthetic pleasure than a desire. The love we bear to relatives and friends may rise almost to the height of a passion, and lead us, irrespective of any rational considerations, to desire their society and their welfare as the first object of our lives. But the term love only indicates a passion of the highest order when employed to express the intense desire for perfect unity and communion between two persons of different sexes. And here, too, we must separate what really belongs to love, as a pure and elevated passion, from the mere gratification of the sexual instinct. The sexual instinct, taken alone, can find its satisfaction in persons for whom there is no love, and with whom there is no desire for any close and intimate connexion in life. But the great characteristic of the passion of love, properly so called, is an intense desire for the sole and perfect possession of the beloved person ; that is, for the possession of his or her confidence,

affection, society—in a word, of the entire personality. So far as the sexual union forms part of this idea of perfect communion, it enters as an element into the passion of love; but it can be wholly withdrawn, without causing the strength of the real spiritual passion to suffer any sensible diminution. Where love takes full possession of the mind, it completely answers to the definition of the passions we have above given, viz., that they are desires, which attain such a degree of strength, that they completely master the reason and control the will.

Hatred is the exact opposite of love, and may be regarded as the polar extreme of the same mental tendency. Daily experience shows us that there is an infinite gradation in the mental attitude which we may hold towards another, from passionate attachment down to entire indifference, and from indifference still downwards to positive abhorrence.

(2) The second of the group of passions we are now considering is the love of honour. When this desire sinks down simply to a frivolous love of admiration, whether of our persons, dress, mental endowments, or any other quality we may possess, we term it vanity. When vanity becomes a national vice, it often rises quite to the rank of a passion, and holds the reason of the nation so far in its hands, as frequently to dictate its policy. Wounded vanity, whether in a nation or an individual, is not frequently so strong a motive to action, as completely to rule the higher dictates of sound policy in the one, and morality in the other. The love of honour, however, may assume a much higher form than that of mere vanity. It may be an intense desire for the appreciation of the wise and the good. If this feeling degenerate, however, into a slavish regard for the opinion of the world, it may again become a dangerous passion. On this passion, for example, has been based the practice of duelling, which exhibits the phenomena of a morbid love of honour becoming a stronger motive to action than even the love of life itself.

(3) The desire for power has not the natural opportunity of becoming a ruling passion so frequently as most other desires. The checks which it is subject to on all hands, in the great majority of individuals, limit its growth, and keep it within reasonable bounds. The example of numerous kings and tyrants, however, shows us that the love of power may become the ruling passion of a man's life, and constitutes a motive which can bend the reason entirely to its purposes, and find its extinction only in death itself.

III. The third group of passions consist of those which have things, and not persons, for their object.

There are innumerable objects around us which we desire, and many which we desire with no inconsiderable degree of intensity. Almost any of these objects may become gradually so essential to our happiness, that the desire for them grows up into a passion, and overcomes all other considerations, of whatever nature.

The two directions, however, in which external things can become most readily the objects of human passion are those of acquisition and amusement. Money, we all know, may easily become the basis of a passion,—a passion so strong as to subdue the reason, and enslave the mind to its pursuit, without any corresponding use or enjoyment of it whatever. Games of various kinds sometimes grow up to be the objects of passionate desire; and so intense is the enjoyment they bring to some natures, that they are willing to sacrifice everything to its acquisition. Hunting becomes a passion when eagerly pursued; and there are not a few who, in the heat of the chase, will face dangers which threaten even life itself. Gambling is a mixed passion, composed of the love of gain on the one side, and the mental tension which the constant uncertainty produces of the other. Owing to this double influence, it attains easily an extraordinary degree of intensity. It is not necessary, however, to enumerate all the different things which may become the objects of passionate desire.

The nature and origin of desire itself we already know ; and it needs only the law of repetition to be applied to elevate almost any human desire whatever to a pitch in which it becomes a motive stronger than the reason or the conscience, and thus assumes the character of a human passion.

The influence which is exerted by the passions upon the human faculties is a subject which belongs to practical rather than theoretical psychology. As it is the nature of all passion to excite the physical and mental forces, and cause them to increase in intensity, we can at once understand that the activity of all the faculties will be promoted by it. While their activity, however, is promoted, they receive at the same time a bias corresponding to the objects which the exciting passion has specially in view. In this way the understanding, while stimulated, will be warped so as to see reasons on one side only ; the imagination will form the most vivid pictures, but they will all be in the direction in which the desires are pointing. The power of language will be intensified, and floods of eloquence poured forth under the influence of passion, even by those who ordinarily show little or no tendency to vigorous utterance. The will attains, in the same way, an iron power of determination, sees no difficulties in the path of realizing what the passions dictate, and continues unwearied in its efforts until the end is secured, or the passion dies away.

The great practical rule for the government of the passions lies in the motto, "Obsta principiis." While the desire is moderate, and the tendency undeveloped by long repetition, reason and conscience and volition can perform their part ; but once let the passion become dominant, and the reason will be warped, the conscience seared, and the will led captive by its power.

CHAPTER VII.

CHARACTER.

WE have now gone successively through all the stages of the development of the human mind. We have seen how the faculties are constructed, one after the other, from the first primordial instincts up to the highest exercise of the reason and the will. We have, likewise, pointed out the nature and origin of the feelings, and shown how feeling, united to volition, forms those impulses which we designate by the term desire. Lastly, we have shown how the desires develop often into the most dominant passions of our nature. Throughout all these various stages of our mental growth there is the same great twofold law ever in operation. It is by the union or blending of like residua, and the distinction and separation of unlike, that we can account for the gradual rise of all our active and intellectual powers: and it is into the same elements that these various powers may, in their turn, be ultimately analyzed.

In the midst of the uniformity, however, which these great laws of mind present, there is this startling fact obtruding itself ever on our notice, namely, that they never, in any two cases, bring about perfectly identical results. The laws of nature, if brought into contact with the same elements, always evolve the same phenomena. In the world of mind, on the contrary, sameness is a phenomenon wholly unknown.

The primary foundation of this variety in human character

is laid, no doubt, in the specific individuality of every human being. Character does not depend, however, merely, not even mainly, upon our original individuality. It depends rather upon the massing of our mental experiences, and is, in fact, but the name we give to the integral result, which is produced by the whole process of our mind-development, when brought to its full maturity. Individuality appears only in the form of a subjective bias ; it is, so to say, a peculiar hue thrown over all the activities of the mind, whether they be developed or undeveloped. Hence it shows itself as strongly in the child as it does in the man, as strongly where no character is yet formed as it does where the character is fixed and determined. That the primary individuality with which we are born has something to do in the formation of the character is still true, for it is this individuality which gives a bent to our mental sympathies, and thus greatly contributes to determine the course in which our faculties operate, as they are in process of formation—to determine, therefore, the kind of experiences which we amass on the road. Still, although this fact of individuality lies in the background as a modifying condition, what we mean by character is, specifically, the whole result which is formed by the entire process of mental growth, as we have followed it up in the preceding chapters.

Let us take a general view of the elements out of which human character is constructed, and the mode in which these elements are appropriated. First of all, the character of every individual depends largely upon the intellectual habits which he forms. A vague, indefinite, wandering, inconstant habit of mind is highly detrimental to the formation of a high character. Clear-headedness, the opposite of all this, is due mainly to two intellectual processes,—first, the massing of similar residua, so as to form well-defined generalizations, and, secondly, the well-developed power of separation and distinction, so as to hold unlike residua clearly apart, and form them into groups and series by means of the laws of

association. The faculty of generalizing, by means of similarities, and of drawing clear lines of separation where there are differences to be noted, is a mental habit which grows up by the daily influence of our mental experience. When education, example, external circumstances, occupation, and so on, lead us to apply these great laws of the intellect in the daily business of life, the capacity of classifying, separating, drawing conclusions, and tracing consequences, becomes fixed by the force of repetition, and our intellectual activity is aroused in this direction by every fresh phenomenon presented. Thus, by degrees, it becomes a maxim of our practical life not to follow appearances, not to look merely at one side of a question, not to decide upon partial and insufficient evidence, but to consider well every representation, to note its practical bearings, and to follow up its consequences irrespective of the present enjoyment which it may hold out. Intellectual habits of this kind can be formed only by the multiplication of intellectual efforts, and without such habits there can be no solid basis on which our determinations are grounded.

But, secondly, if human character depends largely upon intellectual habits, it depends still more immediately upon the volitional habits we cultivate. The difference between a weak and a strong will, between a will that is determined by impulse, and one that is determined by reflexion, between a will that bends before the authority of truth and right and one that disregards everything but present desire, forms the great line of distinction between a worthy and a worthless character. But that which gives the direction to the will is the mass of volitional residua which we accumulate in one or the other direction. When the will has been always allowed to act without restraint, following present impulses in place of rational or moral convictions, the tendency to continue in the same path becomes, by the accumulation of volitional bias, irrepressible, and the character takes the fixed stamp of

what may be termed an irrational and an immoral selfishness. On the contrary, when the power of moral authority is inculcated, and the habit is formed of regarding it as the true guide of the will, in place of immediate inclination, the result is that certain practical maxims are formed by which our daily life is regulated. These maxims are the result of intellectual and moral considerations, which we learn to apply to the various relations of human life, and then use as tests by which the will is determined as to the course which it has to follow under all circumstances. Just as the generalizations of the intellect form categories by which our knowledge is regulated and classified, so do these maxims, which we develop by the accumulation of volitional residua, form practical principles by which we are enabled to guide our conduct.

Lastly, character depends largely upon the regulation of the desires and passions. Passion, as we have seen, is a desire which has grown to such a pitch of intensity as to overcome the dictates of the practical reason. The possibility of such desires being formed must depend upon the repetition of those acts by which the primary pleasure is sought for and obtained. Hence the great aim of moral education should be to give healthy occupation, rational enjoyments, and pure desires. By doing this, sensual and hurtful desires are antagonized, and the mind being diverted from them by other occupations and interests, they have no means of growing up to the intensity of a passion.

Whatever course the daily experiences of life may take, this course will, inevitably, in the long run, form the outline of the character. Education, therefore, in the widest sense of the word, is the great regenerator of human society. To it we must owe the intellectual habits we form, the power which the reason and conscience have over the will, and the strength we possess to regulate the desires and to subdue the passions. Whatever be our character, it is something arti-

ficially constructed ; and education properly considered is the art of constructing it well. How impossible is it, therefore, to over-estimate the importance of drawing every influence and every motive, whether it be derived from philosophy, from ethics, or from religion, into the service of education, in order that the scale of human character may be raised, and the catalogue of evils which at present afflict society may be gradually diminished !

To this great end it is our hope and belief that a more deep and practical psychology must also contribute, as it alone can expound the theoretical laws and principles on which all true human education must proceed.

APPENDIX.

APPENDIX.

SECOND B.A. PASS EXAMINATION.

1873.

LOGIC AND MORAL PHILOSOPHY.

MORNING.

1. Explain the distinction between Concrete and Abstract Names. Does this distinction correspond to that between Substantives and Adjectives?

2. Explain and criticize the following statement :—"The greater the comprehension of a concept the less is its extension, the greater its extension the less its comprehension."

3. What is meant by a Verbal Proposition, and by a Contradiction in Terms? If no X is Y, and some Z is X, and P is the name of those Z's which are X, is it a verbal proposition to say that no P is Y?

4. How would the following judgments be expressed symbolically, by the old system of notation, and by that of Hamilton?

All had not paid who entered;

Some only who paid entered;

None who paid failed to enter.

5. Test the following arguments by the rules of Logic :—

(1) Those who hold that the Insane should not be punished ought in consistency to admit also that they should not

be threatened ; for it is clearly unjust to punish any one without previously threatening him.

(2) If he pleads that he did not steal the goods, why, I ask, did he hide them, as no thief ever fails to do ?

6. On what grounds is it sometimes denied that Induction belongs to Logic ?

7. A man, speculating upon the cause of the Tide at Folkestone Harbour, concludes that it is not produced by the sun, because it does not take place at the same hour every day—nor by the moon, because she is no nearer to us at spring-tide than at neap—but that it is the effect of the tidal train, since that invariably in all weather comes in about the time of high water. To what methods of Inductive inquiry has he been appealing, and how has he failed to employ them correctly ?

8. Explain the principles of what is called a *Natural* System of Classification. In what way, if any, is such a system an aid to further knowledge ?

9. Explain precisely what is implied in the statement that Nature exhibits uniformity. To what extent does it apply to synchronous phenomena ?

1874.

1. Indicate generally the relation of Logic to Psychology.
2. Give the principal divisions of Names needed for logical purposes. Why does not logic recognize the distinctions between Substantives, Adjectives, and Verbs ?
3. How does the Quality of a proposition affect its Quantity ? Is the relation a necessary one ?
4. Trace the connexion between Aristotle's Dictum and the ordinary rules of Syllogism.
5. Discriminate between Mediate and Immediate Inference, and estimate the range and value of the latter.

6. To what extent was the reason for water rising in a pump—"that nature abhors a vacuum"—an explanation? Show why the modern explanation better deserves the name.

7. What exactly is meant by an axiom? On what axiom or axioms does Inductive reasoning rest?

8. What is an Experiment? Are experiments available in all sciences? Why are some specially termed "Experimental"?

9. Exemplify two or three of the leading Fallacies by illustrations of your own.

1875.

1. Define Language; and point out the main functions which it performs. How is it the *spoken* language has become the only universal one amongst mankind?

2. What are Connotative names? What are the principal difficulties by which we are beset in determining the Connotation of any given name?

3. Explain what is meant by the Distribution of a term, taking for illustration the predicate of an I and O proposition. Point out the necessity of the rule about the distribution of terms in the syllogism.

4. (1) "No one can maintain that all republics secure good government who bears in mind that good government is inconsistent with a licentious press."

What premises must be supplied in order to express the above reasoning in Ferio, Festino, and Ferison, respectively?

(2) Test the following:—

"If all men were capable of perfection, some would have attained it; but, none having done so, none are capable of it."

5. Distinguish between Perfect and Imperfect Induction. How do an Example, a Metaphor, and an Analogy respectively fall short of Induction?

6. Observation shows that a clear sky and a cold night are commonly associated. Indicate the methods to which you would resort to ascertain whether either, and if so which, is the cause of the other.

7. Illustrate, with examples, the principal faults to be avoided in a System of Classification. Is there any difference of importance between the classification of artificial objects (e.g., books in a library) and that of natural objects (e.g., the species of plants or animals)?

1876.

1. What are the logical characteristics of the terms *oil*, *oiliness*, *alphabet*, *illumination*?

2. Take the following proposition:—*All water contains air*; convert it by contraposition: change the result into an affirmative proposition; and convert simply.

3. State the fundamental Laws of Thought, and point out how they apply in the formation of any perfect system of Classification.

4. Taking a Syllogism of the third figure, and assuming one of the premises to be false, show whether or not, with the knowledge of its falsehood thus supposed to be in our possession, we can frame a new Syllogism: if so, point out the figure and mood to which it will belong.

5. Describe precisely what is meant *Experimentum Crucis*, and give some illustrations.

6. Give some account of the Baconian method of investigating Nature, and compare it with the views about Induction entertained by Herschel, Whewell, or Mill.

7. Is it possible to eliminate Chance in Inductive investigation? What kinds of knowledge, if any, are, in your opinion, capable of attaining absolute certainty?

8. Can a sharp line be drawn between Formal and Material Fallacies? Give typical examples of each class.

1877.

LOGIC.

1. How is Logic related to Grammar, Psychology, and Metaphysics?
2. What is the central function of Thought, and how are its activities regulated and classified?
3. Analyze the following terms in the counter quantities or wholes of Extension and Intension:—*Man, government, law, triangle, vegetable.*
4. Exemplify Conditional Propositions. How are such propositions reduced and converted?
5. State the following reasonings in strict logical form, and estimate their validity:—
 - (a) As thought is existence, what contains no element of thought must be the non-existent.
 - (b) Since the laws allow everything that is innocent, and avarice is allowed, it is innocent.
 - (c) Timon being miserable is an evil-doer, as happiness springs from well-doing.
6. Distinguish between Induction and Analogy as methods of reasoning. On what does the force of an argument from Analogy depend?
7. To what kinds of fallacy is Inductive Reasoning most liable?
8. Illustrate, from any science you may know, the nature and uses of a Descriptive Terminology and a Nomenclature.

1878.

LOGIC AND PSYCHOLOGY.

LOGIC.

1. Assign the logical characteristics of the terms—*Astronomy, World, Antidote, Independent, Investigation.*

2. Assuming that no Organic beings are devoid of Carbon, what can we thence infer respectively about beings which are not organic, and things which are not devoid of carbon ?
3. Give a clear and precise explanation of the rule concerning the Middle Term of a syllogism.
4. Inquire into the validity of the following argument :— Whatever substance is properly called by the name Coal consists of a carbonaceous substance found in the earth ; now, as this specimen consists of a carbonaceous substance, and was found in the earth, therefore it is properly called coal.
5. Analyze the meanings of the word *Theory*.
6. When two phenomena exhibit periodic changes, in what way or ways may we ascertain whether one is or is not casually connected with the other ?
7. Describe the requisite conditions of a perfect qualitative experiment, that is, an experiment in which no account is taken of the magnitude of the effect.
8. Are there any necessary differences between the methods of classification as applied to animals and vegetables as distinguished from unorganized beings ?

1879.

MENTAL AND MORAL SCIENCE.

LOGIC.

1. State your opinion concerning the relation between Deductive and Inductive reasoning.
2. Describe the logical characters of the following terms :— Equal, Equation, Equality, Equalness, Inequality, and Equalization.
3. Explain how the Universal Laws of Thought give rise to Dichotomous or Bifid Classification.
4. Invent a syllogism in Barbara, and state it both in the extensive and intensive forms.

5. If the major term of a syllogism be the predicate of the major premise, what do we know about the minor premise?

6. What is the relation, if any, between the inductive syllogism and the inductive methods employed in the physical sciences?

7. How do you distinguish between Reasoning by Generalization and Reasoning by Analogy?

8. In the theory of Classification what do you understand by *important*, *characteristic*, *constant*, and *accidental* features or properties?

9. Enumerate some of the chief causes of False Observation.

10. Analyze the grounds of inductive or deductive reasoning upon which you are led to believe that the sun will rise to-morrow morning.

1880.

MENTAL AND MORAL SCIENCE.

LOGIC AND PSYCHOLOGY.

1. "Prevision is a test of true theory." "Prevision is the test of true theory." Describe the forms of proposition to which the above belong, and give their Converses, Contrapositives, and Obverses.

2. Assign precisely the meaning of the assertion that it is false to say some English soldiers did not behave discreditably in South Africa.

3. Explain the relation between the Universal Laws of Thought, the Canons of Mediate Inference, the *Dictum de Omni et Nullo*, the Rules of the Syllogism, and any other forms of the fundamental axioms of inference which occur to you.

4. Ascertain how many universal terms there may be in the premises of a syllogism more than in the conclusion.
5. Estimate on logical grounds the value of the indirect method of demonstration as exemplified in Euclid's elements (*Reductio ad absurdum*).
6. Supposing that a gamester were to declare in your hearing that he had seen sixes thrown with two dice twenty times running; analyze both from a logical and a psychological point of view the impression which would be made upon your mind.
7. How far is the Imagination, in any sense of that term, useful or requisite for the successful pursuit of the abstract and mathematical sciences,—logic, algebra, geometry, &c.?
8. If the proposer of a Scientific Hypothesis is unable to reconcile it with certain facts, under what circumstances do you think that he would still be justified in maintaining the hypothesis?

B.A. PASS EXAMINATION.

1881.

LOGIC AND PSYCHOLOGY.

1. Define and illustrate the distinctions (1) of Contradictory, Contrary, and Indefinite Terms. (2) of Contradictory, Contrary, and Indefinite Propositions.

Has *Some* a contradictory? If so, what is the joint extent of *some* and *not some*?

2. (a) Triangles are equilateral, isosceles, and scalene.
 (b) A ship consists of hull, masts, sails, &c.
 (c) Gold is yellow, ductile, incorrosible, &c.

Give an account of the logical processes severally involved in each of the above propositions; explaining in each case the

relation of the subject to the terms predicated as well as the relations of these terms to each other.

3. What is Predication? Does it ever involve existence, or must existence be always specially predicated?

4. How much can you tell about a Syllogism when you know (1) that only the middle term is distributed; (2) that all the terms are distributed?

Show *directly*—i.e., using only the general rules of syllogism and the forms of immediate inference—in how many ways an E conclusion may be drawn.

5. “*Empirical Laws* can only be extended to *adjacent cases*.” Explain the terms in italics; and state (1) why the extension is thus limited; (2) by what law even this limited extension is made.

6. What is the relation of the Method of Concomitant Variations to the Method of Difference? What are the special advantages of the former method, and what are its special disadvantages?

7. What is meant by the Law of Obliviscence? Give illustrations of its action.

8. Analyze carefully the state of mind of one who is thinking out a problem, or guessing a riddle.

1882.

LOGIC AND PSYCHOLOGY.

1. What is meant by Obversion, Formal and Material? How is Obversion related to Conversion by Negation or Contraposition?

2. Give the obverse and the contrapositive of the following propositions:—

(a) All animals feed.

(b) No plants feed.

(c) Only animals feed.

What is definition, and of how many kinds does it consist ? How would you proceed in order to define such a term as "Virtue" ? How far does Definition in all cases imply a reference to the things denoted by the term ?

3. Using any of the forms of Immediate Inference (including Obversion), show in how many moods the following argument can be expressed :—" Every law is not binding, for some laws are morally bad, and nothing which is so is binding."

4. Define Hypothesis ; and illustrate the uses of hypothesis in scientific inquiry. What do you understand by a legitimate hypothesis ?

5. "The discovery of causes and effects may be seen to be a process of eliminating the non-essential or immaterial." Inquire into the meaning and correctness of this assertion.

6. Define Analogy, and consider carefully the nature of analogical reasoning. Is the assertion that the lower animals suffer pain a conclusion from Analogy ?

7. How are Notions or Concepts formed ? Analyze the mental process in thinking of a straight line as defined by Euclid.

8. Investigate the state of mind called Belief.

Compare the condition of mind (a) of one who is certain about a thing, (b) of one whose judgment is balanced with respect to it, and (c) of one who thinks there is no evidence for or against it.

1883.

LOGIC AND PSYCHOLOGY.

1. Define a Term ; and explain what is meant by the Denotation and Connotation of Terms.

Discuss the following :—"There is nothing in the import of a proposition of which the terms are abstract, but what

there is in some proposition which can be framed of concrete terms."

2. What is meant by saying *Divisio non faciat saltum*? How are you to know that a *saltus* has not been made?

Draw up a logical scheme of divisions so as to indicate the places of the following—AB, *Abc*, *abCD*, *aBC*, *abcD*; ; *a*, *b*, *c*, *d*, representing privative terms.

3. Show by deduction from the rules of Syllogism that there are five, and only five ways of proving a universal conclusion.

4. "Everything which exists is determined by laws of causation and collocations of the original causes." Carefully explain or discuss this statement, pointing out the distinction between Laws and Collocations of Causes.

5. Explain what is meant by (1) Plurality of Causes and (2) Intermixture of Effects. Show how these circumstances frustrate the working of the inductive methods, and how far, and by what means, such difficulties may be obviated.

6. "The business of definition is part of the business of discovery." Explain and illustrate this statement.

7. Give the psychological characteristics of the apprehension of what is called Necessary Truth. State and examine the leading explanations of these characteristics.

8. Describe some of the more striking forms of Intellectual Pleasures and Pains ; and state how you would explain them.

AFTERNOON.

1873.

1. What are the essential elements of a Conscious act or state?
2. How many Senses are there, and on what principle or principles may they be classified?
3. Distinguish carefully between Sensation and Perception.

4. Explain the meaning of the terms "Subject" and "Object;" and discuss the ultimate grounds of the distinction.
5. What perceptions are common to Sight and Touch?
6. Classify Sounds, explaining the grounds of the division.
7. State and illustrate the laws of Association.
8. Define Desire, Volition, Right, Obligation, Merit.
9. What are the conditions of Moral Responsibility?
10. Discuss the meaning of the term "Nature" as employed by ethical writers of different schools.

1874.

1. Give briefly what you consider to be the best classification of the various Mental Phenomena.

Give also some other classification, pointing out in what respects you regard it as defective.

2. Describe the various sensations of which the Eye is the medium, showing the nature and extent of the knowledge of the external world which we thereby acquire.

3. It is sometimes said that we cannot conceive the existence of any other than our present Senses. Discuss the question.

4. What is Attention? To what extent is it voluntary?

5. What exactly is meant by saying that we "understand" a proposition? Take, for examination, some proposition in which both the subject and the predicate are abstract terms.

6. Describe the principal kinds of Association required for learning a new language. How is it that few or no persons of mature age ever acquire perfect mastery of a new language?

7. What is meant by Desires? How are they distinguished from Appetites and from Affections?

8. Give the best definitions you can of Virtue, Justice, Veracity, Candour, Self-love.

1875.

1. Give an account of the method or methods by which an accurate knowledge of Mental States is to be obtained.
2. Are there any points of agreement between the Senses and Sensations of Taste and Smell ?
3. Describe the structure and area of the Organ of Touch. To what extent does discrimination vary in different parts of the organ ? Do we instinctively localize any of our tactile perceptions ?
4. Reasoning has been defined as an act of Mediate Comparison. What mental powers are involved in such an act, and how far are they possessed by the lower animals ?
5. Some psychologists have ranked Imitation as an original mental power. Discuss the question, and distinguish between Mimicking and Imitation.
6. What elements may be discriminated in the full analysis of a Voluntary Act ?
7. Can there be responsibility for acts over which we have no control ? Does the fact, that we may sometimes like to do what in any case we can not help doing, give a moral character to such acts ?

1876.

1. Compare together the several Senses with reference to their importance in affording us a knowledge of the properties of Space.
2. Describe the Laws of the Association of Ideas.
3. Distinguish between the doctrines of Nominalism, Ultra-Nominalism and Conceptualism.

Mention some of the principal philosophers who have upheld each of these doctrines.

4. What do you know of the opinions of the philosophers as to the origin of our ideas of Time?

5. Distinguish between Sensuous and Rational Intuitions, and exemplify the latter.

6. Give brief definitions of any of the following :—Moral Obligation, Sanction, Hedonistic, Utilitarianism, Altruistic.

7. Describe some of the modifications in which the Moral Sense doctrine has been put forth.

8. Name some of the obligations which may be raised to the Greatest Happiness principle as the foundation of Morality.

1877.

1. Describe the modes in which we obtain the data of Mental Philosophy.

2. Answer the following question carefully :—How many senses does a man usually possess?

3. Explain the theory of the Stereoscope and of binocular vision generally.

4. State exactly what is meant by Habit; and distinguish, as far as possible between habitual, reflex, automatic, and instinctive actions. Describe the process of acquiring habit or skill, as in the case of learning to play a musical instrument.

5. Give the opinions of any philosophers as to the supposed faculty of Attention. Inquire how far it is possible to attend to several things at the same time.

6. Distinguish the processes of mind which we sum up under the word Memory. Can you form any idea of the physical explanation of memory?

7. A cloud appears in a cloudless sky. Investigate the

grounds on which we believe that there must be a cause for its appearance.

8. Describe Aristotle's or Hamilton's theory of Pleasure and Pain, and criticize it.

9. Describe the moral system of any one (and not more than one) of the following philosophers:—Shaftesbury, Hutcheson, Hume, Butler.

10. To what kind of person, or persons, belongs the right, according to the utilitarian theory, of deciding upon the moral rightness or wrongness of actions?

1878.

1. What is meant by an Intellectual Sense, and how would you arrange the senses according to their degree of intellectuality?

2. By what means does the eye estimate the Real Magnitude of objects? How is it that a room, when empty, looks smaller than when furnished?

3. What is meant exactly by the Identity (*a*) of the material universe as a whole; (*b*) of a living organism; and (*c*) of a conscious mind?

4. Explain the proposition that a perception is a process of classification.

5. What is meant by an Innate Idea? Is the hypothesis of innate ideas compatible with the doctrine that all knowledge is derived from experience?

6. Define Appetite, and distinguish appetites from volitions properly so called.

7. Explain the proposition that all moral training consists in the formation of certain Habits.

8. Show how the place of Prudence or Self-love in an Ethical System will vary according to the particular standard of morality adopted.

9. Give some of the different views held by moralists respecting the province of Reason in moral acts.

1879.

1. Give definitions of Sensation, Perception, Imagination, and Conception, and point out the relations which exist between them.
2. Explain how it is that a man may have a particularly good ear for languages, and yet be deficient in musical sensibility.
3. What is meant by the Testimony of Consciousness, and within what limits do you consider such testimony to be valid?
4. Is Memory a simple mental operation, or can it be resolved into more elementary processes? How is it that we can often recall the initial letter of a person's name without being able to recall the whole name?
5. How would you classify actions according to the degree in which mind or consciousness enters into them? Is it possible to derive voluntary and involuntary actions alike from one fundamental type?
6. Discuss the question whether Pleasure is something more than a mere satisfaction of desires.
7. What is meant by an Innate Moral Disposition? How far can a man be said to bring his character into the world with him?
8. What do you regard as the exact relation between the sentiment of moral obligation and the experience of social discipline?

1880.

1. It has been said that every mental state is compounded of three factors, an emotional, an intellectual, and an active or volitional. Inquire into the truth of this assertion, and

point out its bearing on the usual mode of classifying mental phenomena.

2. Define with precision the following terms :—Sense, Sense-organ, Sensation, and Sensibility ; and point out any ambiguities which appear to be involved in them.

3. How many of our senses give us any information respecting Space ?

4. Analyze the feelings aroused in the mind of an ordinary tourist by the Spectacle of Alpine scenery.

5. Give the popular meanings of the term Instinctive Action, and assign it a precise scientific connotation. Do you consider that psychology can inquire into the origin of instinct ?

6. It has been said that we are able to modify the force of a motive by an act of attention. Inquire into the correctness of this view, and point out what you consider to be its ethical implications.

7. Trace the history of the ethical problem raised in the question “Why am I obliged to keep my word ?” Inquire briefly in the light of the principal ethical systems, whether this question admits of a universally acceptable answer.

1881.

1. Define Attention, and state what you know respecting the laws of its operation.

2. What different classes of feeling are now supposed by psychologists to be included under the term “Muscular Sense?” Wherein does the experience of bending the arm differ from that of having it bent by another person, sight being supposed not to co-operate ?

3. How does the ear judge of Direction ? By what considerations would you account for the imperfections of its sense of direction ?

4. What is meant exactly by saying that an Emotion can

be inherited? Discuss the question whether there are inherited Emotions in the case of Man?

5. Are there any psychological laws which seem to you fitted to support a theory of Fine Art?

6. Define Voluntary Action; also the terms Motive, End, and Intention, used in connexion with it. Does Imitation (Mimicry) rightly fall under the description of Voluntary Action?

7. Compare the views of any two modern ethical writers on the limits of Moral Obligation.

8. How is the case of conflicting moral rules dealt with (a) by the Intuitionist, (b) by the Utilitarian?

1882.

1. Examine some of the leading classifications that have been made of the fundamental facts of mind.

What do you understand by a Faculty? Discuss the objections that have been made to the use of this term in Psychology.

2. Explain and illustrate the terms Quantity, Quality, and Complexity of Sensations; and discuss the connexion of these with the pleasurableness or painfulness of a sensation.

3. Distinguish carefully between Sensations, Perceptions, and Images. Have we now any sensations without perceptions, or perceptions without images?

4. Classify the leading facts of Mental Association; and carefully consider whether Association by Similarity in the cases in which the similarity is only partial admits of resolution into simpler forms.

5. Compare any two of the chief classifications of the Emotions with which you are acquainted.

6. Upon what principles would you propose to Explain the Expression of Emotion? Does Emotional Expression afford a sufficient explanation of the beginning of Voluntary Action?

7. Explain at length the difference between Egoistic and Altruistic Conduct, with a view to resolving the question whether deliberate conduct is ever intentionally altruistic.

8. Discuss the meaning of Justice, taking account of the terms Distributive, Reparative, Retributive Justice ; Legal Justice, Moral Justice, and Natural Justice.

9. What do you take to be the essential character of Intuitive Ethics ?

Enumerate the principal varieties of the Intuitive Method in modern ethical systems.

1883.

1. How far is *tabula rasa* a correct, and how far an incorrect, representation of Mind at the beginning of life ?

2. What is the position of Sense in the tripartite division of Mind ?

Mind has otherwise been said to be composed of Feelings and Relations among Feelings ; what, on this view, is the position of Will ?

3. Compare Hearing and Sight in respect of their general intellectual importance ; also Touch and Sight as they are of account for External Perception.

4. Give examples of Subjective Sensation ; how do you suppose it arises ? How do (1) Hallucinations, and (2) Dream-images differ from the normal Images of waking life ?

5. Illustrate and explain "Obstructive Association."

6. Bring out the intellectual elements involved in Emotion, taking Anger and Sympathy as examples.

7. Argue the question whether all Voluntary Action is for pleasure or from pain.

8. Can a man act wrongly otherwise than through ignorance ?

9. Show what different lines were taken by English ethical thought in reaction from Hobbes.

SECOND B.A. EXAMINATION FOR HONOURS.

1873.

LOGIC AND MORAL PHILOSOPHY.

1. Describe generally the view of Logic in accordance with which it may be defined as "the Science of the necessary Laws of Thought" pointing out particularly :—

(1) The limitations of the science consequent upon this view as compared with Mr Mill's view.

(2) The technical phraseology peculiar or appropriate to this view.

2. Explain the meaning and practical applications of the doctrine that "Logic postulates to be allowed to state explicitly in language all that is implicitly contained in the thought."

In the assertion that "all x is y " is it implied that either x or y exists?

3. Distinguish between Collective and General names. Of what kind are the subject and predicate of the following positions :—

The really disinterested are scarce.

Few men can forgive.

Defining a "Concept," show whether the same distinction will apply to Concepts.

4. Explain the nature and object of the method of expressing our reasoning by propositions of the form " X is a mark of Y ," rather than by those of the form " A is B ."

If P is a mark of the presence of Q , and R of that of S , and if P and R are never found together, am I right in inferring that Q and S may sometimes exist separately?

5. A maintains that the Definition of a term should include all that any one knows about the properties of the thing defined; B, all that the average experts know; C, all that

the general public knows ; D confines it to what he himself knows. What is to be said for and against each of these views ? How would the dispute be affected by substituting "meaning" for "definition" ?

6. Explain the fallacies of Illicit Process and *Petitio Principii*.

What are the objections to the moods AEO, AOO, IEO, in the third figure ?

7. Explain some method of illustrating Reasonings and Syllogisms by means of Diagrams. Does such a device correspond to geometrical illustrations of algebraical theorems ?

8. In the study of Logic what advantages do you consider may be gained by attention to the history of the science ?

1. Define the Inductive and Deductive processes, and trace their relation to each other. How are the Syllogistic Figures related to each other ?

2. Exemplify "Inductions, improperly so-called."

3. What is the fundamental principle of the Inductive process, and how is it arrived at ?

4. Explain the function of Hypothesis in Scientific inquiry ; and give in detail the conditions of its legitimacy.

5. Investigate the nature and value of the argument from Analogy ; how is it related to the Inductive process ? and on what does its cogency depend ?

6. Give the general principles of a Philosophical Classification.

7. How do you answer the question, Is a philosophical Criterion of Truth possible ? What various answers have been given to this question ?

1. Define Psychology. Indicate some of the most important respects in which the practical problems of Government

and Education are, or should be, influenced by the conclusions of a sound Psychology.

2. Idealists and Realists have both maintained that their own view is the most natural—viz., is the view which the uneducated and unperverted mind spontaneously adopts. Discuss the fairness of such an appeal, and the comparative success with which each party resorts to it.

3. Discuss the propriety, and the ultimate foundation of the distinction between Primary and Secondary qualities of Matter.

4. Give some account of the state of mind called Attention.

5. To what extent can we appreciate (1) Solidity, by the Eye; (2) Distance, by the Ear? How far is each of these appreciations dependent upon muscular sensibility?

6. Pleasure has been defined as the vigorous and easy exercise of the faculties. Examine the accuracy and completeness of this view.

7. Discuss the question whether there are original peculiarities in the capacity of different Memories for taking cognizance of different classes of phenomena. Is any light thrown on this subject by the circumstances under which Obliviscence is brought about by old age, disease, &c.?

8. Indicate briefly the principal kinds of Association of the non-intellectual states, both among themselves and with the intellectual states.

1. Define Ethics; and illustrate the distinction between the Legal and Moral quality of actions.

2. How far is the question of Free Agency fundamental in morals? What does a Voluntary act involve?

3. Explain the nature of Desire; and examine the grounds on which Desires are distinguished from pure Emotions and Rational Resolves.

4. What is meant by Secondary Desires, and how are they formed? Is there any evidence of their existence in the lower animals?
5. Describe and classify the motives to Voluntary Action.
6. Define Instinct, Appetite, Affection, Right, Obligation, Merit.
7. Contrast the opposed theories as to the nature and origin of Moral Distinctions.
8. Sketch historically the growth and development of these theories amongst English moralists.

1874.

LOGIC AND MORAL PHILOSOPHY.

1. Give the history and meaning of the distinction of Arguments into *à priori* and *à posteriori*.
2. Explain fully the psychological steps involved in the formation of a Concept or Notion. What are the laws determining the validity of the process? Are modern psychologists agreed as to the nature and value of the result?
3. Are there actual differences in nature answering to the logical gradation of Species and Genera?
4. State and discuss the different theories as to the import of a Proposition.
5. How does the expressed quantity of the Predicate affect the number of propositional forms, and the common doctrine of their conversion?
6. Give examples of figured and unfigured Syllogisms, and state the canon of each. Can the number of valid Syllogistic forms embodied in the mnemonic verses be amplified?
7. Are there any kinds of formally valid and really useful Inference not syllogistical?

8. Discriminate between formal and material Fallacies. Can the line of separation be sharply drawn? and which appear to you the more common sources of error in ordinary reasoning?

1. Discuss the following account of the nature of the Inductive and Deductive processes: how does it stand in relation to the views of Mill, Whewell, and Hamilton?—
“There are two ways of attaining truth; either to proceed from the external world to the internal, viz., from facts to ideas; or from the internal to the external, viz., from ideas to facts.”

2. In order to establish a real science of Inductive Logic, what sense do you consider must be assigned to the Law of Causation, and what importance is to be attached to it?

3. Is what enters into Psychology under the name of Generalization the same as what is treated of in Logic under those of Induction and Analogy?

4. What is meant by the distinction between positive and negative Thought, and between positive and negative Ideas? What is the value of this distinction?

5. What are the principal purposes, special or general, which systems of Classification are intended to secure? Show, by examples, how they are best attained?

6. Explain, with examples, what is meant by the distinction between the Analytical and Synthetical method of treating a science.

7. How do you distinguish between Knowledge and Belief? Is this distinction of importance in Logic generally, and in Inductive Logic in particular?

8. Investigate the axiom or axioms upon which the Theory of Probability rests; and describe what you consider to be its position in a general system of Logic.

1. In discussing mental phenomena, do you speak of States, or Elements, or Faculties; or of each in different relations? and why?
2. State and comment on the Classifications of mental phenomena adopted by Locke, Hume, Hamilton, and Mansel.
3. Discriminate between the sensations and perceptions of Sound. On what does the material difference of sounds identical in musical pitch depend?
4. Are direction and distance to any extent instinctive perceptions of Sight? Compare the early manifestations of human and animal intelligence in this respect.
5. What are the points at issue in the controversy as to the nature and origin of our notions of Time and Space?
6. Characterize the conviction of Self or Personal Identity. Can it be accounted for on the theory that all which the mind contains is derived from Experience through the Senses?
7. Estimate critically the doctrine which refers the necessity of Mathematical Axioms to what is called Inseparable Association.

1. Explain the following terms, pointing out any shades of meaning by which you consider each of them to be distinguished from the others:—Moral Philosophy, Ethics, Casuistry, Deontology.
2. What is meant by the Ethical Emotions, and how are they distinguished from other emotions?
3. Analyze the state of mind of one who is “forming a resolution,” pointing out in particular the extent and grounds of any such effect as resolutions can have upon our future action.
4. Investigate the nature and determining conditions of the feeling of the Sublime.

5. Examine the grounds of the love of Gambling, and the nature and legitimacy of the ethical objections to it.

6. What (if any) are the most important points in past ethical controversies which have practically ceased to be in dispute now?

7. Give a brief critical and historical account of the principal divisions of what is commonly called Utilitarianism.

8. Give some account of the Ethical system of *one* of the following:—Cudworth, Kant, Adam Smith.

1875.

LOGIC AND MORAL PHILOSOPHY.

1. To what principles should you appeal to decide, in any doubtful case, which was the Subject and which the Predicate of a proposition?

2. Give some account of any disputes as to the nature and functions of the Cupola of a logical proposition. Does comparative grammar throw any light upon the question?

3. How far would (1) Mill, (2) Hamilton or Mansel, agree with the account of the Syllogistic process, that it is simply a means of comparing two ideas with one another by comparing them both with a third?

4. How does it come to pass that there can be any dispute as to whether the Syllogism is a *petitio principii*?

5. What was meant by the “contingent,” and the “possible” in Modal propositions? How should you define these terms now?

6. Explain briefly in themselves, and in relation to their former philosophical foundations, the meaning of *summa genera*, and the use of the Porphyrian tree.

7. (1) A negro is a man, therefore a negro's head is a man's head.

(2) Two thirds of x are both y and z , therefore some y are z .

What are the claims of the above to be considered processes of "formal thought"?

8. Explain, with examples, the fallacies of "illicit process of the minor," and those termed "amphibolia," and "a dicto secundum quid ad dictum simpliciter."

1. What is meant by the Explanation of Nature, and what different forms may such explanation assume?

2. Describe the true function and value of Hypothesis in scientific inquiry. What is meant by the statement that "the reasonings of geometry are based on hypotheses"?

3. How is Scientific Definition arrived at? What are its laws and limits?

4. Discuss the statement that "natural groups are given by type and not by definition." What are the relative objects and advantages of natural and artificial classification?

5. Apply the general principles of Scientific Terminology and Classification to some branches of knowledge with which you are familiar.

6. Give an account of the Special Fallacies to which Inductive reasoning is exposed.

1. Enumerate and characterize the Benevolent Affections.
2. Describe Self-love, and illustrate its relation to the Passions and to Conscience.

3. Distinguish between pride, Vanity, and Arrogance; Goodness, Prudence, and Virtue; Regret, Resentment, and Remorse.

4. Analyze the Beautiful as an object and as an emotion.
5. What is meant by "Moral Causation"?

6. Notice the ambiguities attaching to some of the leading terms in the Free-will controversy.
7. Give some of the more important replies to the question "Whence do we derive our notion of the Moral Quality of Actions"?

1. Indicate generally the nature of the contrast, in respect of method and results, between what is commonly called the Scottish school of Psychology and the modern analytical school.
2. What do you understand by Self-consciousness, and what are the principal conditions for its existence?
3. What variations are there in the Eyes of different persons, or in different parts of the same eye, in the power of appreciating Colour; and what is the probable explanation of the fact?
4. If we wish to know whether a rod is straight, we look down it lengthways; if we wish to know whether it has small irregularities, we run the fingers along it: why so?
5. Certain animals show a remarkable aptitude for finding their way back to places from which they have been taken. It has been proposed to attribute this to some entirely distinct sense. Discuss the psychological necessity and propriety of this solution.
6. In what principal ways do you consider that one language, civilized or savage, is superior to another as a logical and psychological instrument?
7. What is Immediate Knowledge? Give some account of the dispute (without going into the reasons on either side) as to what is, and what is not, immediate. How can such a dispute arise?

1876.

LOGIC AND MORAL PHILOSOPHY.

LOGIC.

1. On what laws or principles does Deductive Logic rest? Does the investigation of their nature and origin come within the province of Science?
2. Discriminate between Perceptions and Concepts. How are the latter formed? and what is meant by their Quantity and Quality?
3. Explain the reason of the ordinary rules with regard to the Quantity of the Predicate in a proposition. How do the rules affect the progress of Conversion?
4. What different views have been taken as to the import of the Proposition? Which appears to you the more correct, and why?
5. Distinguish between the figured and unfigured Syllogism. What are the conditions of valid reasoning in each form? Does Aristotle's Dictum equally apply to both?
6. What is Reduction, and on what grounds has its abolition been proposed?
7. What is the special use of the doctrine of Fallacy? Describe the logical Quadruped, and exemplify the forms of Fallacy it summarizes.

1. Point out the exact nature of the relation between the logical processes of Abstraction, Analysis, Synthesis, and Generalization.
2. The English are very wealthy, and they have a gold currency; therefore it may be inferred that a gold currency tends to make a people rich.—Regarding the above argument from a logical point of view, state your opinion whether it is

valid, or under what conditions it might be regarded as valid. State also how you would proceed to investigate the subject.

3. Is there, in your opinion, any connexion between the logical process of Induction and the doctrine of the universal law of Causation? If your answer be affirmative, explain the nature of the connexion; if negative, give your reasons.

4. Describe the purpose and general character of Lord Bacon's doctrine of *Instantiae*; and briefly illustrate some of his principal classes of Instances.

5. "De jugeai que je pouvais prendre, pour règle générale, que les choses que nous concevons fort clairement et fort distinctement sont toutes vraies; mais qu'il y a seulement quelque difficulté à bien remarquer quelles sont celles que nous concevons distinctement."

Examine the logical bearings of the doctrine stated in this extract.

6. Distinguish between Symbolised and Intuitive Reasoning. Is it possible in reasoning to employ symbols which are devoid of meaning?

7. The ordinary name of a class of objects being vague and unsatisfactory, point out the comparative advantages and difficulties of giving a clearer definition to the old name and of introducing a new and more precise term. Give instances of both methods of procedure.

8. Describe the fallacies of Non-observation and of Mal-observation.

MENTAL AND MORAL PHILOSOPHY.

1. Briefly describe the different grounds of classification of the Emotions proposed by any leading writers on the subject.

2. Describe the characteristics of the emotion of Fear, and consider its relation to the virtue of Courage.

3. Distinguish carefully between reasonable Self-love and Selfishness ; and explain your view of the difficulty that a virtuous man would derive constant pleasure from doing good to others.

4. What is the nature of the relation, if any, between the Laws of Nature, meaning the general laws of the material universe, and the Law of Nature, as the expression has been used by many moralists ?

5. Describe the state of mind and body called Effort, and consider its relations to Pleasure and Pain.

6. What precautions ought we to take that we may perform as perfectly as possible the process of Deliberation ?

7. Explain and illustrate the differences between Act, Intention, and Motive ; and point out their relative importance in a moral as contrasted with a legal aspect.

8. Give outlines of any two (but not more than two) of the following moralists :—Cudworth, Shaftesbury, Hutcheson, Butler.

MENTAL PHILOSOPHY.

1. On what grounds is Psychology to be regarded as a distinctive branch of mental science ?

2. What are the sources, direct and indirect, whence a knowledge of Mental Phenomena may be obtained ? How are the phenomena classified ?

3. Illustrate the statement that “all sensible qualities are resolved by physical science into motions in their objects.”

4. What sensations or perceptions are mainly due to Muscular Activity ?

5. What is the fundamental characteristic of Intellect ? and how is Cognition to be distinguished from Emotion and Volition ?

6. Discriminate between Memory and Imagination ; and give, as far as you are able, the laws governing each.

7. What are the more distinctive mental elements involved in a native turn or genius for art and for science ?

1877.

LOGIC AND MORAL PHILOSOPHY.

DEDUCTIVE LOGIC.

1. What can be said for or against the representation of Propositions in the form of Equations or Identities ?

2. State your opinion on the question whether every Proposition implies or asserts the existence of Resemblance between the things or classes of things denoted by the terms.

3. (a) "The most perfect Logic will not serve a man who starts from a false premise."

(b) "I am enough of a logician to know that from false premises it is impossible to draw a true conclusion."

Comment carefully upon the two foregoing extracts.

4. Show that if the Conclusion of a Syllogism be a universal proposition, the Middle Term can be but once distributed in the premises.

5. What are the classes of objects regarded as possessing or not possessing the qualities p, q, r, s , which may exist consistently with the fundamental laws of thought, and the conditions that no class possesses both p and q , but that everything which does not possess q possesses r , but not s ?

6. Some logicians have given the following as the rule of logical procedure :—

"La première condition est de ne rien omettre, et de ne rien supposer."

Criticize the rule.

7. What is the Law of Parsimony ?

8. The probabilities of the premises of a syllogism in Barbara being supposed to be given, show how to find the probability of the conclusion, both absolutely and relatively to the premises.

9. Analyze the Fallacies which may arise out of the ambiguous use of the words "right" and "wrong."

INDUCTIVE LOGIC.

1. State what you know about the history of Induction as a method of reasoning.

2. Is the definition, "an inference from the known to the unknown," an accurate and adequate account of Induction?

3. Distinguish between the inductions of Mathematical and those of Physical Science, giving instances of each.

4. To what logical danger is the process of Simple Observation exposed; and how is it to be avoided?

5. Discriminate carefully between Empirical and Rational inductions.

6. What inductive methods would be employed to determine, in a doubtful case, whether death had taken place from poisoning, starvation, or organic disease?

7. What is meant by scientific Explanation? In what different ways may one law be explained by other laws? Give examples of your own.

8. Explain the kind of conceptions essential for scientific Classification.

MENTAL PHILOSOPHY.

1. Has the doctrine of Evolution any direct bearing on Psychology? and if so, in what directions and to what extent?

2. Discuss the meaning and range of Consciousness.
3. What elements are involved in the simplest act of (a) Knowledge, and (b) Volition ?
4. Classify the Impressions of the Senses according to their persistence and power, as well as their facility and vividness of revival in memory and imagination.
5. What are the conditions of Sounds in the sense of Hearing ? Distinguish Noises from Musical Tones. What special characteristics may be discriminated in Musical Sounds ? In particular, explain fully the meaning and origin of *quality*, "*timbre*," or "*klang*."
6. Give the distinctive features of the mental states known as Reverie, Somnambulism, and Double Consciousness. Have you any explanation to offer of these and cognate states ?
7. Explain, as fully as you can, the meaning and implications of the terms "Reason" and "Rational."

MORAL PHILOSOPHY.

1. Define Instinct, and carefully distinguish it from Habit. Give illustrative instances.
2. Explain the importance of the association of ideas in the theory of Beauty.
3. Analyze the sources of Beauty in the case of a Gothic Cathedral. (You are at liberty to substitute another instance of complex beauty, if you prefer it.)
4. Institute a careful comparison between the Epicurean and Utilitarian theories of Morals.
5. How are Intuitional theories of Morals affected by recent speculations concerning Evolution ?
6. Analyze the moral grounds and limits of the duty of Obeying the Laws of one's country.
7. What do you understand by the Character of a man ? What are the Psychological and moral grounds of the value attaching to a good character or reputation ?

8. Investigate carefully the meaning which belongs to the word "necessarily," when it is said that our actions are necessarily governed by our motives.
9. Describe the development of the Will, as it usually proceeds during the life of a man.

1878.

LOGIC AND PSYCHOLOGY.

LOGIC.

1. Can all kinds of Propositions be exhibited in the intensive as well as the extensive form? Give reasons in support of your answer, and in the event of its being in the negative, draw up a list distinguishing between those kinds of propositions which can, and those which cannot, be so exhibited.
2. A certain argument having been shown to involve Paralogism, inquire into the conditions under which this failure does or does not tend to establish the contradictory conclusion.
3. Illustrate the principle that the relations of Logical Symbols are independent of space-relations.
4. Distinguish exactly between the Definition and the Description of a class. How many kinds of definitions were recognized by the Scholastic logicians?
5. What is Locke's position with regard to the History of Logic?
6. Inquire how far reforms in Inductive Logic, or Method, are due to professed writers on logic, as contrasted to physicists or other discoverers in concrete science.
7. What kinds of Fallacies did Lord Bacon class under his *Idola*?

8. When two phenomena are casually connected together, can you always ascertain which is the cause and which is the effect ? If so, how ?
9. What are the difficulties encountered in an attempt to classify the sciences ?

1. Do Abstraction and Generalization run *pari passu*, or can we perform either process independently of the other ?
2. What is the relation between the Law of the Uniformity of Nature, and the Universal Law of Causation ?
3. Discuss the question whether an Effect is or is not simultaneous with its Cause, or whether in some cases it is and in others is not.
4. What do you understand by the process of Mathematical Induction ? Does it throw any light upon the theory of inductive reasoning ?
5. Describe any opinion known to you concerning the relation of the processes of Inductive and Deductive Reasoning.
6. What are the requisites of a good Hypothesis ?
7. What are the difficulties which stand in the way of applying the methods of induction to Psychology ?
8. Analyze with precision the meaning of the name Science ; and distinguish Science from Art, Knowledge, Practice.

PSYCHOLOGY.

1. What are the relative advantages of the hypotheses of Mental Faculties and Mental Functions ?
2. Distinguish carefully between Sensations and Emotions, and show how far they exist in perfect separation.

3. What is meant by an Illusion of the Senses? Are such illusions reconcilable with the hypothesis of original or innate forms of perception?
4. Estimate some of the attempts made to simplify the Laws of Association. What do you consider to be the limits of such simplification?
5. Does the fact that we are unable by immediate introspection to compare feelings quantitatively so nicely as to be able to say that a particular sensation is twice as intense as another, preclude all exact quantitative estimate of mental states?
6. Give some of the conditions which determine our estimate of Duration. How is it that a past event which has deeply interested us appears nearer than an indifferent event which in reality is equally remote?
7. Why do we sometimes see an object double instead of single? Is there anything analogous to double images in the other senses?
8. Is it true that pleasure uniformly accompanies actions beneficial to the organism? So far as this law is correct, how is it to be accounted for?

1. Estimate comparatively the theories of the Development of the Will which set out respectively from spontaneous movement and reflex action.
2. Is it possible to account for the belief in Free-will, supposing that human actions are in reality always determined by conditions?
3. Give an account of the principal processes of Attention as they are exhibited in the higher moral self-control.
4. What marks off a crude from a cultivated *Æsthetic* Taste? Indicate the principal stages in the development of the latter out of the former.
5. Distinguish carefully between the different kinds of

Mental Force which combine to impel people to visit the scene of a great catastrophe, as the recent collision on the Thames.

6. Estimate some of the attempts to make Desire the fundamental fact in volition.

7. Under what circumstances may a man who has once given way to temptation be said (a) to be more likely, (b) to be less likely, to commit the same offence a second time?

1879.

MENTAL AND MORAL SCIENCE.

LOGIC.

1. Investigate the question whether Truth and Falsity are Opposites or Negatives, each of the other.

2. Explain the precise meaning of the proposition "Some X's are not some Y's" (the proposition ω of Thomson). What is its Contradictory? Give your opinion of its importance.

3. What are the rules of logical Definition? Exemplify them in defining (1) a circle, (2) parallel lines.

4. Is it possible to define the terms Gold, Coal, Legal Nuisance, Civilization, Cleopatra's Needle?

5. Name the Weakened Moods of the syllogism. In what figure can there be no weakened mood, and why? Do any of the nineteen moods commonly recognized give a weaker conclusion than the premises would warrant?

6. Examine the question whether hypothetical and disjunctive arguments are reducible to the forms of the categorical syllogism.

7. It is found that there are in a certain club of x members, y London graduates and z lawyers: obtain an expression for the number of lawyers in the club who are

London graduates, and determine its least and greatest possible values.

8. What do you mean by (1) Formal (2) Material Truth, as applying (a) to a single proposition, (b) to a Syllogism?

9. Give various opinions which have been held as to the form of the Inductive Syllogism, and discuss their validity.

1. Investigate the logical, psychological, and moral grounds of the saying "*Qui s'excuse, s'accuse.*"

2. Is it (1) logically (2) physically possible that all material things are subject to the law of gravity, and that at the same time all not-material things should be subject to the same law?

3. Prove that you can make no assertion about the classes of things, "Matter" and "Gravitating thing," which is not either contained in the assertion that they are coincident classes, or else contradictory thereto.

4. A theft of coins, all of one date, having been committed, a man is arrested and found to be in possession of similar coins of that particular date. Analyze the logical grounds on which it may be inferred that the coins thus found were the stolen ones, and further point out how the question would be affected according as the coins when found were (1) fewer, (2) equal, (3) greater in number, as compared with those stolen.

5. Estimate upon logical grounds the possibility of establishing a school in which students should be rendered capable of discovering the Laws of Nature.

6. Under what circumstances are we to accept the failure of an experiment or series of experiments as proving the non-existence of the phenomenon intended to be produced?

7. What did Lord Bacon mean by "*Ostensive*" or Light-giving Instances? Illustrate their importance by reference to facts of modern science.

8. What precisely is meant by the Law of Continuity ?
Point out the grounds and limits of its validity.

PSYCHOLOGY.

1. What are meant by Subjective Sensations ? Can they be brought under the usual definition of a Sensation ?
2. Is Introspection adequate to the analysis of mental phenomena ? Illustrate your answer by a reference to recent hypotheses put forth by physiologists as to the really elementary sensations in our impressions of colour and of tone.
3. If I press my finger against the internal part of the eyeball I have an impression of a circle of light in the external part of the field of vision. What inferences may be drawn from this experiment as to the nature (a) of visual perception, and (b) of perception in general ?
4. Do you consider the existence of an External World to be first of all an indestructible belief, and, secondly, a primitive and unanalyzable datum of consciousness ?
5. Compare the intelligence of man with that of the higher brutes, and estimate any recent attempts to account for man's intellectual superiority.
6. What different mental processes are discoverable in Dreaming ?
7. What are the advantages of Binocular over Monocular Vision ? What corresponds to Binocular Vision in the sense of Touch ?
8. Is Psychology adequate to the solution of the question respecting the nature and origin of Necessary Truths ?

1. Discuss the question whether pleasures differ in any other respect than in quantity.

2. Examine some of the attempts to classify the Emotions, and point out the chief difficulties in the way of a good scientific classification of this order of mental phenomena.
3. How far do you consider it possible to erect a definite objective standard of Taste?
4. Are the pleasures of Benevolence original or derived?
5. Does it matter whether the Hedonist uses the idea of Pleasure or that of Happiness in dealing with moral problems?
6. Is the discussion of the question of Free Will a necessary part of Ethical inquiry?
7. What is the relation of Ethics to Jurisprudence? What is meant by saying that modern Ethics puts prominently forward the legal or jural view of morality?
8. Indicate briefly the different ways in which the problem of reconciling interest and duty was dealt with by Hobbes, Shaftesbury, Butler, and Paley.

1880.

MENTAL AND MORAL SCIENCE.

LOGIC.

1. Compare the logical force of the three assertions—(1) *Non homo est viridis*; (2) *Homo est non-viridis*; (3) *Homo non est viridis*. Why are they called *propositiones infinitæ*?
2. What do you understand by (1) Demonstration, (2) Indirect Demonstration, (3) *Reductio ad absurdum*?
3. Investigate the nature of the opposition between singular propositions.
4. Is it logically or psychologically reasonable to (1) commence, (2) terminate, an inquiry into the guilt of a prisoner by inquiring whether he had been previously convicted of acts similar to that alleged?

5. Define Language ; and determine what falls within the limits of the definition.
6. What is Empirical Knowledge ? If all knowledge is founded on experience, is all knowledge empirical ?
7. What parts of Logic would you comprehend under Applied Logic ?
8. Is it possible to fall into Fallacies of Observation ?

1. Investigate the question whether hypothetical (conditional) reasoning is reducible to the form of the Categorical Syllogism ?
2. Define Immediate Inference, Conversion, Permutation, and Obversion, and point out their relations one to another.
3. In what different ways is the Import of Propositions regarded from the point of view of Formal or Conceptual and of Material Logic ?
4. What do you consider to be the relation between the Logic of Induction and the Science of Probability ?
5. What different views of the nature and aims of Logic are involved in the question of the Quantification of the Predicate ?
6. Are we always able to distinguish between Real and Verbal predication ? To which category would you refer the proposition "All men are mortal " ?
7. Does the difference between the formal and material views of Logic involve the question of the ultimate source or sources of knowledge ?
8. What is meant by a Fallacy of Induction ? Why is it so much more difficult to classify the fallacies of induction than those of deduction ?
9. Does the progress of modern science tend to modify the old conception of Cause and Effect as two distinct events ?

PSYCHOLOGY.

1. Comment on the use of the terms "Mind" and "Science" in the current expression "Mental Science," and indicate what you consider to be the exact range of such a science.
2. Do you consider that a psychologist is logically justified in setting out with a definition of Sensation as the result of the action of external things, and afterwards resolving these external objects into bundles of sensation?
3. How much do we certainly know at present respecting the so-called Muscular Sense and its physiological conditions?
4. How could you define an Elementary Sensation? Can we ascertain what are the elementary sensations of Colour?
5. If a man is watching a train about to start and is vividly expecting its movement, he may fall into the illusion that it begins to move before it actually does so. How would you explain such an error?
6. If a writer were to assert that we begin by seeing all objects double, and only gradually learn to see them single, would he, in your opinion, have any grounds for his assertion?
7. In what way do you consider that the mind obtains the idea of Self? What intellectual powers are presupposed in the possession of the idea?
8. It is sometimes said that an intelligent dog will recognize any member of the class beggars as such. Inquire what is likely to be the real nature of this recognition, and whether it involves the possession of general ideas.

PSYCHOLOGY AND ETHICS.

1. What do you understand by Visualization? Estimate its importance in scientific pursuits.

2. Investigate the origin of Musical Form. Is it governed by any psychological or other natural laws?
3. How would you explain the extreme interest excited by important boat-races, games of cricket, &c.?
4. Inquire carefully into the meaning of the Greatest Happiness of the Greatest Number. To what Hedonic end does the progress of science and industry tend?
5. What do you think is the best classification of moral duties which can be framed in the present day?
6. Can you name any cases in which it is a positive duty to resist the laws of the country?
7. How far do you consider that the views of (1) Hobbes, (2) Shaftesbury, are accepted as correct by recent moralists?
8. Can any new light be thrown upon the question of Free Will by (1) the Theory of Probability, (2) other branches of mathematical science, (3) any branch of physical science?

B.A. EXAMINATION FOR HONOURS.

1881.

MENTAL AND MORAL SCIENCE.

LOGIC.

1. What is meant by Symbolic Logic, and what is its relation (a) to ordinary Logic and (b) to Mathematics?
2. Discuss the possibility of dealing with the logical relations among propositions by attending only to the Intension or Connotation of the terms.
3. "Thing," "white object," "mental state," "machine," "horse." In what respects do these concepts differ from one another? How far do these differences affect the problem of defining the several terms?

4. Why has Immediate Inference been called apparent? Do the reasons urged in support of this view appear to you to apply in any measure to Mediate Inference as well?

5. Bring out the exact meaning of the Hamiltonian proposition ω ? "Some x 's are not some y 's." What is the contradictory of this proposition? Estimate its logical importance.

6. It has been said that the argument *a fortiori* and some other deductive inferences are not reducible to the ordinary Syllogistic form. Inquire into the meaning of this statement, and discuss the possibility of embracing all modes of deductive reasoning under one comprehensive form.

7. Examine the question whether the force of a Disjunctive Proposition as a premise in an argument is equivalent to that of a Hypothetical (conditional) Proposition.

8. Compare the different meanings attached to the pair of terms, Analysis and Synthesis. How would you define these terms?

1. "As often as the same circumstances are repeated the same effect will follow, yet where the effect is the same we cannot infer that the cause is the same too." Explain this statement fully, taking especial account of the meaning to be given to "same."

2. *Cessante causa cessat et effectus.* Discuss this doctrine, and consider whether the cases in which it appears true and the cases in which it does not have each some other distinguishing characteristic by which this difference might be explained.

3. "In a certain degree the Method of Residues and the Method of Means are *opposite* to each other. For the Method of Residues extricates Laws from their combination, bringing them into view in succession, while the Method of Means discovers each Law, not by bringing the others into view,

but by *destroying their effect* through an accumulation of observations." Describe the methods here mentioned, and explain what is here said of them.

4. Distinguish carefully between Improbable and Impossible as scientific terms.

5. Examine what is meant by a "Natural or Scientific Classification," and discuss the following dictum of Mill:—Kinds are classes between which there is an impassable barrier.

What, according to modern biologists, is the criterion of naturalness of arrangement in their sciences?

6. Briefly state and examine the chief views that have been held concerning the *grounds* of our belief that two straight lines cannot enclose a space.

7. "*A body under the action of no external force will remain at rest or move uniformly in a straight line.* Possibly the mind, which has dwelt long on the subject, will see the truth of this law as necessarily involved in the idea of matter, and as having therefore an axiomatic character more convincing than any proof founded upon the agreement of calculation and experiment." Do you find anything fallacious in the above; and if so, what, and why?

8. What do you understand by a "scientific explanation"? State and examine Mill's doctrine concerning the limits of explanation.

9. State the general rules of chief importance in the conduct of Observations and Experiments.

PSYCHOLOGY.

1. What is meant by a function of intellect? Are Discrimination, Assimilation, and Retention equally acts of the mind?

2. Distinguish between a simple and a compound Sensa-

tion. Is the sensation of white simple or compound? How does a compound Sensation differ from a group of associated Sensations?

3. What are the characteristics of the Organic Sensations? How would you account for the imperfect localization of these sensations?

4. Is it possible to give to the term Imagination a precise scientific connotation? If so, how would you distinguish Imagination from Memory?

5. How does the Evolutionist's hypothesis of "inherited dispositions" differ from the old conception of "innate ideas" and the later conception of "*à priori* mental forms"?

6. Examine carefully into the sources of pleasure in ordinary Field Sports. Do the facts seem to you to support the idea that the infliction of pain causes pleasure?

7. Is there in your opinion any way of determining the precise part played by Association in the effects of the Fine Arts? Discuss the question by a reference to the arts of Music and Architecture.

8. Is it necessary to assume at the beginning a purposeless or random kind of action in order to account for the development of the individual will?

PSYCHOLOGY AND ETHICS.

1. What is meant by a Sense? Is the phrase "Internal Sense," desirable or justifiable? Trace, as far as you can, the growth of this so-called "internal sense."

2. Describe the principal facts connected with our sensations of Temperature.

Under what circumstances are sensations of temperature absent—say, from the hands and face?

3. How would you explain the seeming reality of dreams? It is a common experience in dreaming to find that slight

sensations have appeared with greatly exaggerated intensity. Can you account for this, or mention any physiological facts which suggest an explanation ?

4. Describe the state of mind called Desire, considering carefully the relation between Feeling and Desire.

5. Give a general outline of what you conceive to be the scope and method of a science of Ethics.

6. Discuss the distinction of greatest and highest pleasure, and exhibit clearly the ethical significance of this distinction.

7. Define Virtue. Do you regard the distinction of Intellectual and Moral Virtues as a valid one ? What is meant by Intellectual Virtues ?

8. Describe the leading positions occupied by the conception of Nature in the history of ethical opinion.

1882.

MENTAL AND MORAL SCIENCE.

LOGIC AND PSYCHOLOGY.

1. State and explain what you regard as the First Principles of Logic. Has Logic any postulates ?

2. Discuss carefully the logical interpretation and relations of the terms Possible, Actual, Necessary, and Impossible. Also examine the following :—" Objectively regarded, the actual and the necessary are one ; and the distinction between them, together with the whole conception of possibility (and impossibility), is due to the opposition of thought and things."

3. Explain fully the difference between the intensive and the extensive rendering of propositions and syllogisms. Do you regard the following reasoning as extensive or intensive ?—

“ We must not say that either bodily strength or meanness

is a necessary alternative, for courage and meanness are incompatible, while courage does not depend on bodily strength."

Explain your answer.

4. Show in what cases it is possible to reach the same conclusion by substituting for the middle term its contradictory.

5. Represent the following propositions symbolically and diagrammatically, and show what propositions involving the same terms are contradicted by them and what are consistent with them :—

(1) Wherever there is smoke there is also fire or light ;

(2) Wherever there is light and smoke there is also fire ;

(3) There is no fire without either smoke or light.

State whether you regard disjunctive terms as mutually exclusive or not, adding your reasons for the course you adopt.

6. Briefly explain and discuss the following :—

Exceptio probat regulam,

Qui nimium probat nihil probat,

Deductio potissima.

7. Supposing you were about to engage in controversy, explain as systematically as you can the rules of procedure you would desire to lay down beforehand.

8. Examine the following dicta :—

Omnis determinatio est negatio.

Difference is incapable of becoming the ground of inference.

1. It has been said that the most fruitful observation has always been guided by conjecture. Inquire into the meaning of this statement, and point out what you consider to be the relation of observation to antecedent knowledge.

2. The effect has been defined as "the procession of its cause." Examine the meaning of the definition, and discuss its adequacy.

Is it possible to reconcile this view of the causal relation

with the apparent disproportion between the "cause" and the "effect" in certain cases?

3. Examine briefly Mill's account of Empirical Laws.

Do you consider Empirical Laws to be ultimately distinct from other laws?

4. What is meant by a Negative Argument?

Explain the conditions upon which the value of a Negative Argument depends.

5. Are there in your opinion any assignable limits to the extension of scientific knowledge?

If we are as yet unable to conceive of any solution of a problem, does the fact show that the problem is insoluble?

6. What is meant by the Law of Error or Divergence?

Is this law susceptible of proof, and if so, of what kind of proof?

7. Discuss the question whether it is desirable to use language mechanically in reasoning.

What characteristics of a language facilitate, and what characteristics hinder, a mechanical use of it?

8. Discuss the leading classifications of Fallacies, explaining the principles upon which you would classify them, or your reasons if you hold that they do not admit of classification.

PSYCHOLOGY.

1. Explain briefly the terms Power, Faculty, Capacity, Disposition. Discuss the question whether the facts of Mind are explicable on the assumption of a variety of faculties. How far is this assumption analogous to that of "Forces" in Physics or of "Functions" in Physiology?

2. State concisely in what ways you think the sciences of Physiology, Philology, and Mental Pathology may serve to advance Psychology.

3. How far can physiological differences be found corre-

sponding to the psychological differences in the sensations of the special senses?

4. Describe and explain the Binocular Field of Vision. What is meant by the Conflict of the Retinæ? Give instances and discuss their bearing on the theory of binocular vision.

5. It has been maintained by some that we can "only attend to one thing at a time," and by others that several "things" may be attended to at once. Give some account of this controversy and explain your own views of the question.

6. Thinking, it is said, is an activity. Explain precisely the nature of this activity and its connexion (1) with Imagination and (2) with Speech.

7. Analyze the conception of Personal Identity, and discuss the leading views that have been held concerning it.

8. Explain the steps by which we came to know Things (or Substances) having attributes and existing in space and time.

PSYCHOLOGY AND ETHICS.

1. "The greater the mobility of a sense-organ, the more knowledge does the mind obtain by means of it." Examine this statement.

2. Examine carefully into the effect of change or contrast of mental state on the intensity of pleasures and pains.

Illustrate and explain the so-called "negative pleasures."

3. Analyze the pleasures of Wit. Compare the emotional effect of a clever conundrum with that of a mathematical problem.

4. What is meant by the Sense of Shame?

Inquire into the circumstances which excite this feeling, with a view to determine its exact relation to Conscience or the Moral Sentiment.

5. Examine carefully the different kinds of movement which precede voluntary movement, with a view to determine how far they enable us to explain the growth of Will.

6. Inquire into the meanings of the word Happiness as commonly used, pointing out what you consider to be the relation of the idea of Happiness to that of Pleasure, and to that of a permanent Self.

7. What is meant by "Duties to Ourselves"? Do all Ethical Systems recognize such duties?

On what different grounds may Suicide be regarded as a wrong action?

8. It has been said that the attempt of moralists in ancient and modern times to discover a universal principle or axiom underlying the rules of Common-Sense Morality has frequently ended in tautologies and circular reasonings. Examine this statement.

1883.

MENTAL AND MORAL SCIENCE.

LOGIC.

1. How were the doctrines of the Categories and of the Predicables related originally? Sketch the main historical transformations of the doctrine of Categories.

2. What proof would you give of the various rules of Conversion? Without assuming Conversion, justify logically the process of Contraposition.

3. Argue the question of the logician's right to employ mathematical signs of operation. In particular, determine the logical use of the signs \times and \div .

4. Set out Mill's general conception of Logic in contradistinction to Hamilton's; and show how his doctrine of the Function of Syllogism follows naturally from it.

5. Discuss fully the logical and the psychological issues involved in the question whether it is possible to abstract without generalizing.

6. Explain the uses of the phrases *à priori* and *à posteriori* in Logic and in Epistemology. State what you know of their history.

7. Review the various attempts, beginning with Aristotle's, to express the process of Induction in syllogistic form.

8. (a) Prove the equivalence, or other relation, of the two expressions :—

(1) All D is either A or B or C :

(2) There is some B or A, or else all D is C and not B.

(b) Show what may be inferred as a possible description of warm-blooded vertebrates from the following, and state whether any of the information there given is superfluous for the purpose :—(1) All vertebrates may be divided into warm-blooded and cold-blooded, and all produce their young in but one of two ways, *i.e.*, are either viviparous or oviparous. (2) No feathered vertebrate is both viviparous and warm-blooded. (3) No oviparous vertebrate that is cold-blooded has feathers. (4) Every viviparous vertebrate is either feathered or warm-blooded.

1. "The distinction of antecedence and consequence is purely logical. . . . Could a cause exist as such *before* its effect, it could exist *without* its effect, but as the two are correlative aspects of the one event, this is impossible."

If you assent to this, say how you would meet the objection : Then, why does not everything happen at once ? If you dissent, explain how you conceive the connexion between cause and effect, if they are events occupying successive moments of time.

2. "The progress of science depends upon the study of

exceptional phenomena." Elucidate this statement, and enumerate the varieties of exceptions that are of most importance logically.

3. Discuss the value of "chains of evidence" formed of "approximate generalizations" or probabilities.

"What is true approximately of all individuals is true absolutely of all masses." Explain this.

4. What is essential to Explanation? What is meant by saying that one explanation is more scientific than another? Has Explanation any limits?

5. Examine the following :—The rain falls, and sparks fly upward, (1) because this is natural; (2) because each returns whence it came; (3) because the one is subject to gravitation and the other to levitation.

State how you would proceed to ascertain the causes of these movements.

6. State and examine Mill's doctrine of Natural Kinds.

7. Compare Bacon's conception of interpreting nature with that of Mill.

8. Supposing a convention were appointed to draw up a new and universal language, state concisely what you regard as the most important principles which should guide its procedure.

PSYCHOLOGY.

1. Deal with the various objections that have been brought against the possibility or the value of Mental Introspection.

2. What do we understand by "Feelings of Innervation"? By what evidence would you (1) prove their existence, (2) determine the character of their physiological conditions?

3. Explain the bearing of the doctrine of "Local Signs" upon the psychological theory of Extension.

Why does the Coloured Spectrum appear as extended in space, and not the Musical Scale?

4. Take any external object as perceived by sense, say an orange, and give a full account of the experience according to the theory of Associationism ; in particular, explaining the appearance of outness and interfusion of the qualities.

5. Distinguish Belief psychologically from the various subjective states to which you think it most nearly related ; also define its relation to Knowledge, from the philosophical point of view.

6. Examine the grounds, psychological and philosophical, upon which Consciousness is denied to be commensurate with Mind. When and how did the question come first into prominence ?

7. Show the import of the " Social Factor " in the development of the individual's consciousness (taking separately its main phases).

PSYCHOLOGY AND ETHICS.

1. Give some account of the *philosophical* question at issue between Nominalists and Conceptualists, and show what light Psychology throws upon it.

2. Some psychologists have maintained that Memory is the fact to be accounted for, others that it is Forgetfulness. Explain this difference and give your own views.

3. Examine the doctrine that Excitement is a form of feeling distinct from Pleasure and Pain.

Also, consider how far and in what sense it can be maintained that Pleasure or Pain admits of revival and of association with particular objects and actions.

4. Define the Tragic and analyze the feeling it excites.

5. Compare the views of Bain and Spencer concerning the growth of Will ; and add your own criticisms.

6. Consider carefully how far the conduct of a nation can

be judged by the same moral standard as the conduct of an individual.

7. Enumerate and examine the main points in the Evolutional theory of Ethics.

8. Write a brief sketch of the moral teaching of the Stoics.

M.A. EXAMINATION.—BRANCH III.

1879.

LOGIC.

1. Give an accurate scheme of logical division in which the following things shall find places:—Name; Part of Speech; Term; *Vox logica*; Verb; Noun; Adjective; Syncategorematic term.

2. What are the rules which apply to Inference by Disjunctive propositions? Exemplify them, and show whether they are or are not reducible to the *Dictum de omni et nullo*.

3. Discuss the question whether the functions of Affirmative and Negative propositions in reasoning are exactly similar.

4. “The oysters which are now eaten in London are generally obtained from abroad, and some which are eaten are far from being good.” What inferences can be drawn from the preceding propositions?

After giving a general answer, assume, as numerical instances, that 4 oysters out of 5 are obtained from abroad; and, firstly, 1 out of 3 are bad, and, secondly, 1 out of 6 are bad.

5. What do you mean by Logical Method? Can there be such a thing as a Method of Discovery?

6. Given three terms,—for instance, *water*, *blue*, and *fluid*,

—how would you proceed to ascertain the utmost number of purely logical relations which can exist among them?

7. When a beaten dog ever afterwards fears a stick, is this a proof that he generalizes?

8. What do you mean by a Natural System of Classification? In what cases is such a system not useful?

9. Point out the different requisites of a Philosophical Language, according as it is required to assist in reasoning or to record its results. Inquire, however, whether these functions of language ultimately differ, except in degree.

PSYCHOLOGY.

1. What is the physiological ground of the specific differences among our Sensations, and what attempts have been made to connect all orders of sensation with one original type of feeling?

2. What mental and physical processes are involved in the act of Writing? Can you account for the fact that, when the powers of speech are deranged, the capability of writing is commonly affected too?

3. Trace some of the bearings of the doctrine of Evolution on psychological method. Are there any certain rules by which we may determine, in the case of the human mind, what elements are transmitted by inheritance?

4. If Matter and Motion are ultimately resolvable into Feelings or states of consciousness, is it allowable to speak of the latter as products or effects of nervous processes?

5. Which do you suppose to arise first in the development of the individual mind,—the belief in other minds, or the belief in an external world? Give reasons for your reply.

6. What different ways are there of explaining the class of movements known as Emotional Expression? Why is it

often so difficult to distinguish between the Emotional and the Volitional factor in an action?

7. Describe and explain the action of the Emotions on Belief. Are we equally disposed to expect what answers to our wishes and what answers to our fears?

8. It has been said that, in many pursuits,—for example, field sports,—we can only attain pleasure on condition that we do not consciously aim at it. How far do you consider this rule to extend, and what do you regard as its exact bearing on the Hedonistic theory of the ultimate end of action?

SUBJECT FOR ESSAY.

On the Quantitative Treatment of Mental Phenomena.

HISTORY OF PHILOSOPHY.

1. What is Hume's account of the elements of Mind, and how may it be criticized from the point of view of modern Psychology?

2. What did Hume mean by Natural and Philosophical Relation? What relations are matter of necessary reasoning according to Hume, and on what is this necessity based? Estimate his mode of dealing with mathematical cognition.

3. Give briefly Hume's doctrine of Causality, connecting it with his explanation of the ideas of Substance and Identity. What objections have been urged against the doctrine from a strictly empirical point of view?

4. "The following of general rules is a very unphilosophic species of probability, and yet 'tis only by following them that we can correct this and all other unphilosophical probabilities." Comment on this passage, and estimate the objection more than once brought against Hume's system, that it

finds no room for the fixed order of nature supposed to be assumed by Science and Inductive Logic. How much did Hume contribute to Inductive Logic?

5. What did Kant mean by saying that he carried out Hume's problem in its widest extent? Define exactly the effect of Hume's teaching on Kant's discussion of philosophic problems.

6. (a) "There is no single book to which you can point, as you do to Euclid, and say: This is Metaphysic." (b) "For here is an advantage upon which, of all possible sciences, Metaphysic alone can with certainty reckon: that it can be brought to such completion and fixity as to be incapable of further change, or of any augmentation by new discoveries."

Comment on these two passages of the *Prolegomena*, and estimate the claims here put forth by the critical philosophy.

7. In what sense and within what limits is Causality a necessary law according to Kant? Show how he seeks to reconcile with his main position the limitation of the principle in the case of man's free-will and its extension to the idea of a First Cause.

8. Give the bearing of the arguments of the *Prolegomena* on the question of Kant's Idealism.

SUBJECT FOR ESSAY.

Is Logic a branch of Psychology? If not, what is its position in a classification of the Sciences?

1880.

LOGIC.

1. What do you understand by the assertion that Logic is

an objective Science? If not objective what is it in your opinion?

2. Leslie Ellis pointed out that though a St Bernard dog is certainly a dog, a small St Bernard dog is not a small dog. How do you reconcile this with the processes of immediate inference as laid down by Dr Thomson?

3. State explicitly which of the following meanings must be assigned to the mark of quantity "Some" in the Aristotelian system: *Some only; some, perhaps none; some, it may be all or none; some certainly, and it may be all*; point out the difficulties which arise from an erroneous interpretation of this little word.

4. Some logicians have asserted that all the moods of the syllogism are reducible to the form of Barbara. Inquire into the truth of this assertion.

5. What is the propositional form in which a definition must be stated? How do you know a definition when you see it?

6. Exemplify the nature of the inductive syllogism, and estimate its scientific importance.

7. How far is it true that mathematical truths can be discovered by induction?

8. Do you consider that accidental discovery has contributed much towards the progress of the inductive sciences? How far would it be correct to say that accident is an element in (1) all deductive discovery; (2) all inductive discovery?

PSYCHOLOGY.

1. What are the different modes of sensibility connected with the skin, and how may the relative degrees of these sensibilities in different persons, and in the same person at different times, be estimated?

2. Distinguish between the sensation and the mental image

of a colour. By what intermediate steps are the two phenomena connected, and under what circumstances do they become confused ?

3. Argue the question whether it is legitimate to attribute a form of self-consciousness to the lower animals.

4. How would you formulate the Laws of Association ? Do you think it possible to express them as laws of nervous action ?

5. Does the Emotion of Beauty depend on the perception of some quality in objects, or does the attribution of such a quality depend on an emotion ?

6. What legitimate scope, if any, does the science of Ethics assign to the passion of revenge ?

7. Define Motive, and comment on the use of the word in the saying that different people are not influenced alike by the same motive.

8. What do you regard as the relation of the idea of Good to the fundamental problems of Ethics ?

SUBJECT FOR ESSAY.

How far can the study of the inductive methods of physical science assist us in the Inductive treatment of the Social Sciences ?

HISTORY OF PHILOSOPHY.

1. Give an account of the principal influences which determined Descartes to strike out his new path of philosophic search.

2. What is the method of Descartes as formulated in the *Regulæ ad directionem ingenii* (*Règles pour la direction de l'esprit*) ? What is the relation of this treatise to the

Discourse de la méthode? Compare the *Regulæ* with the *Organum* of Bacon.

3. What do you suppose Descartes to have meant exactly by his *cogito ergo sum?* Estimate some of the principal objections brought against it during the author's lifetime and since.

4. What different arguments for the existence of God are put forth by Descartes, and how does their mode of presentation vary in different writings? To what extent was he indebted for these arguments to his predecessors?

5. What was Descartes' conception of the material world? In what way did he suppose the mind to arrive at a knowledge of real objects?

6. What is the fundamental psychological conception illustrated in *Les passions de l'âme?* Compare the account of the emotions here given with any other treatment of the same subject to be met with in the history of philosophy.

7. What different elements in the system of Descartes are meant by his "Dualism"? How are the fuller developments of the Cartesian doctrine by Geulinx and Malebranche, respectively, related to these elements?

8. Indicate briefly what you regard as the influence of the philosophic method of Descartes on the different directions of modern philosophic thought.

SUBJECT FOR ESSAY.

Theories of Happiness.

1881.

LOGIC.

1. Answer Pilate's question—What is truth?
2. Assuming that fault is found with the customary state-

ment of the six or the eight rules of the syllogism, re-arrange or re-state them according to your own best judgment.

3. Discuss the question how an indefinite or pre-indesignate term should be interpreted.

4. "In the case of singulars the distinction between contraries and contradictories seems to disappear." Trace out the consequences of such a doctrine, and inquire into its truth.

5. In what figures, if any, are the following Thomsonian moods valid? Where the conclusion is weakened, point out the fact:—AUI; YAY; UO η ; IU η ; UEO.

6. What do you understand by the Baconian Philosophy? How far do you think that the methods of the inductive sciences of the present day answer to Bacon's idea of them.

7. Discuss from a logical point of view the propriety of calling the Battle of Hastings "the Battle of Senlac."

8. If according to the Aristotelians all correct reasoning rests upon the *dictum de omni et nullo*, must not all fallacy consist in a breach of this dictum? Of course you will support your answer by reasons.

9. Formulate the law of continuity, and point out the limits of its validity.

PSYCHOLOGY.

1. Examine the arguments by which recent writers have sought to exclude psychology from among the sciences.

2. Define perception. Is it quite the same thing to say, "I perceive light," and "I have a sensation of light"?

3. Investigate the conditions which determine our everyday estimate of time or duration. What meaning do you attach to the expression "objective time"?

4. Discuss any recent views, known to you, concerning the structure of general ideas or concepts. Is there, in your opinion any way of mediating between the extremes of Nominalism and Conceptualism?

5. Examine carefully into the relation of the amount of pleasure accompanying a sensation to the quantity of the stimulus at work.

6. Give any recent views respecting the nature and significance of the feeling known as ennui. What is your own analysis of the feeling?

7. What is meant by the play impulse, and what light do you consider is thrown by the study of it on more complex mental phenomena? Is play correctly described as random action?

8. If a writer concedes that it is possible to desire virtue for its own sake, is he committed to the conclusion that we desire other things than pleasure?

SUBJECT FOR ESSAY.

The Limits of Scientific Knowledge.

HISTORY OF PHILOSOPHY.

1. State fully Berkeley's theory of vision as unfolded in his different writings. Point out the relation of his doctrine to pre-existing theories, and inquire how far subsequent research and criticism have confirmed, added to, or upset the doctrine.

2. Comment on Berkeley's use of the terms, idea, notion, abstract idea, inference, suggestion, conceivable, touch (tangible ideas), and objective.

3. Distinguish carefully between Berkeley's theory of vision, and his doctrine of perception as a whole and of the external world, as expounded in the *Principles*. Assign the immediate historical antecedents of the system. What do you consider to be the relation of the doctrine to modern Empirical Idealism?

4. Estimate in the light of the author's own writings, and of subsequent criticisms, the sufficiency of Berkeley's theory of material things, as external and persistent, in relation to the beliefs of common sense and to the pre-suppositions of science.

5. Give an account of Berkeley's Nominalism, and point out its exact place in his system of philosophy. Compare his Nominalism with that of any later writer.

6. Account for the prominence of the question of the infinite divisibility of extension in the system of Berkeley; compare his treatment of the problem with that of Hume, and of Kant, or Sir W. Hamilton.

7. What was Berkeley's theory respecting the nature and origin of our idea of Cause or Power? Trace the subsequent history of the philosophic conception of causality from the point at which Berkeley left it.

8. Compare carefully the theory of knowledge contained in the *Principles* with that unfolded in the *Siris*. What do you regard as the connecting link between the two, and as the relation of each to English thought as a whole?

SUBJECT FOR ESSAY.

The relation of Ethical Science to accepted Moral Maxims.

1882.

LOGIC.

1. Examine the distinction between Form and Matter in Logic.

Do you consider a purely Formal Logic to be possible? If so, show what the Subjects are with which it can deal.

2. Examine carefully the different views taken with

respect to the nature and sources of the Axioms of Contradiction and Excluded Middle.

3. Inquire into the nature of Singular Propositions, considering the question whether they should be regarded as identical with Universals, as identical with Particulars, or finally as a third class apart. Examine the following assertion: "In no way can a Syllogism with two singular premises be viewed as a genuine syllogistic or deductive inference."

4. Examine the reasons for regarding Hypothetical arguments as radically distinct from Categorical. Estimate the attempts (a) to resolve the former into the latter; and (b) to identify the former with Immediate Inference.

5. Compare the meaning of the Symbol = as used in Mathematics and in Logic.

$$1. AB = BC, AC = BC, \therefore AB = AC.$$

$$2. x = y, \therefore xz = yz, \text{ and } \frac{x}{z} = \frac{y}{z}.$$

State how you would deal logically with the first of the above mathematical reasonings; also consider what logical processes there are analogous to the second, and point out the difference between the logical and mathematical operations thus symbolized.

6. Compare any two recent views as to the relation of Induction to Deduction.

7. Define Cause, and explain your definition.

To Mill's definition it has been objected (1) that it is practically impossible to consider the *sum-total* of the antecedents, or to determine the *immediate* antecedent; and (2) that therefore our so-called physical laws (or laws of Nature) are after all only Empirical laws having no claim to absolute certainty. Inquire into the force of these objections.

8. Define Probability, and investigate the nature of Probable Inference.

How would you express generally the probability of the concurrence of two events x and y , the probability of

each apart being known, and there being no reason to suppose any incompatibility or any connexion between them? How would the problem be affected if you had the additional datum that one or other of the events always occur?

9. Discuss the question whether the treatment of Fallacies, either wholly or in part, should be excluded from Logic.

If excluded, to what other Science or Sciences should they in your opinion be relegated?

PSYCHOLOGY.

1. How do you know that there are other sentient things besides yourself, and that you are not living in a world of automata?

2. Give what seems to you the most probable psychological explanation of the origin and development of Language.

3. Write a brief chapter on Auditory Perceptions.

The attempt has frequently been made to find analogies between the colour spectrum and the chromatic scale; compare the two, and consider how far there is any real analogy between sensations of colour and sensations of mind.

4. Give a psychological account of Expectation.

It sometimes happens that a series of events, A, B, C, is perceived as C, B, A. How would you explain this?

Compare the shock of surprise experienced at the absence of an expected presentation with that experienced when a presentation is presented unexpectedly.

5. Discuss the relations to each other of the perceptions of Space, Time, and Motion, so as to disclose their mutual implications and their logical and chronological priority.

6. Compare musical cadences, visual forms, and the movements of dancing, with a view to eliciting a common æsthetical principle.

7. Describe the several steps in the process by which we

obtain the voluntary control of our thoughts, and consider carefully the connexion between controlling thought and controlling movement.

8. Examine the following :—

“The Determinist maintains that all action is ultimately dependent upon feeling, and rejects the notion of uncaused volition as both unscientific in conception and false in fact. The Indeterminist, on the contrary, contends that there are cases in which action is independent of feeling and even opposed to it, and regards the conception of Free Will not as contradicting the scientific conception of Causation, but as transcending it.”

LOGIC.

Write an Essay upon *one* of the following subjects :—

(a) “The proper place of Logic among the Sciences; more particularly its relation to Mathematics, to Psychology, and to the Philosophy or Theory of Knowledge.”

(b) “Nature and Use of Hypothesis.”

HISTORY OF PHILOSOPHY.

1. Explain precisely the object of Locke's *Essay concerning Human Understanding*, and discuss the leading objections that have been urged against the *method* he followed in it.
2. In what sense and on what grounds did Descartes assume the existence of Innate Ideas? Was Locke's polemic an *ignoratio elenchi* or not? What do you take to be the meaning of Leibnitz's reply: *Nihil est in intellectu quod non fuerit in sensu, nisi intellectus ipse?*
3. Give some account of the relation of Locke's Philosophy to that of Bacon and Hobbes.

4. State and criticize Locke's doctrines concerning—(1) Substances, (2) Substance, and (3) Essence.

5. Explain Locke's classification of the Qualities of Matter. Compare his views as to the nature of Matter with those of Descartes.

6. What did Locke understand by Modes? Explain their relation (1) to Simple Ideas, (2) to Things.

Locke speaks of (a) Simple Ideas of Space got by sight and touch, and (b) of Simple Modes of Space. Examine the difference.

7. Comment upon Locke's distinction (1) between the Certainty and the Reality of Knowledge, and (2) between General and Particular Knowledge.

8. Point out the sceptical elements in Locke's Philosophy, and discuss his treatment of them.

SUBJECT FOR ESSAY.

(a) A critical examination of the leading philosophic theories concerning the connexion between Mind and Body,

or

(b) The different psychological conceptions of Will involved in modern systems of Philosophy.

1883.

LOGIC.

1. How much can you tell about a syllogism that distributes its middle term twice?

What conclusions, if any, can be drawn respectively from the following pairs of propositions?—

(a) { There is no Turk that is not brave,
 { None but the brave deserve the fair.

(b) { All X is Y.
Only Z is Y.

(c) { No Xs are Ys, except such as are Zs.
No Zs are both Xs and Ys.

2. Compare the logical with the mathematical interpretation of the following :— xx ; $x+x$; $(-x)(+x)$; $(-x)(-x)$; and discuss any difficulties to which they give rise.

3. “The particular proposition, Some A are B, is really ambiguous, its meaning varying with the matter: at one time it expresses possibility, at another, uncertainty; sometimes it announces exceptions, and sometimes particular facts empirically ascertained. But in a strictly formal logic, which is therefore always analytical, it can have no place.” Elucidate and discuss this passage, taking account of any attempts with which you are acquainted to render the logical treatment of particular propositions more consistent.

4. Define and distinguish Predicate, Predicable, and Predicament. Discuss some of the leading classifications of the Categories, and explain how you would yourself classify them.

5. Enumerate the reciprocal relations of Concepts (1) as regards their extent, (2) as regards their intent. Consider the best ways of representing these relations diagrammatically.

6. Explain precisely what you understand by the Uniformity of Nature, and the place you assign to it as a principle of knowledge. In your answer take account of the following :—“What is called the simplicity and uniformity of nature is not what exists and is observed, but what is constructed in Abstraction, letting drop the observed complexities and irregularities.”

7. What is a “Residual Phenomenon?” How is an experimentalist to distinguish between a residual effect and an erroneous result?

8. Does a coincidence require more evidence to render it

credible than an ordinary event? Give reasons for your answer.

Head being thrown three times successively, it has been maintained by some writers that tail will probably appear at the next trial, by others that it is more likely that head will appear again. Discuss this.

9. What is a Natural Classification? State and explain the rules which you would lay down for the right conduct of such a classification.

PSYCHOLOGY.

1. What would you understand in general by the Sensibility of a Sense? Under what circumstances would you say that two persons were equally sensitive in a certain respect, and in what different respects could you measure their sensibility, say, to pressure?

2. Explain the steps by which we come to localize our impressions of Touch.

How far is the development of the perception of space in two dimensions similar in the case of Touch and Sight?

3. Give an account of the principal phenomena of after-impressions or after-images, and discuss the importance of the facts ascertained in relation to psychology.

4. What is meant by Expectant Attention? Illustrate some of the effects of this attention, and give what you consider to be the psychological explanation of the phenomena.

5. Inquire carefully how many kinds of Association there are. Examine the following:—"Mere Similarity does not involve Association. In what is called Association by Similarity the link connecting the present and the revived presentation is always one of Contiguity."

6. Investigate the nature of the feelings of Doubt, Contra-

diction, Disappointment, and Regret, pointing out their common characteristics and their points of difference.

7. Define Desire, and point out its relation to feeling and to volition. Inquire carefully into the relation between the force of a desire as a motive to action and the intensity of the pleasure which constitutes or is involved in the subject desired.

8. What is meant by the Conflict of Motives? Distinguish between the Passive and the Active Resolution of this conflict.

SUBJECT FOR ESSAY.

(a) The Nature and Ultimate Ground of Inductive Reasoning; *or*
(b) The Nature and Scope of Symbolic Logic; its relation to ordinary Formal Logic and to Mathematics.

HISTORY OF PHILOSOPHY.

1. Briefly describe the method by which Descartes sought to arrive at a Criterion of Knowledge. How far has his method remained the dominant one in modern philosophy?

2. Define the position of Locke with respect to the fundamental problems of knowledge. What is meant by saying that Locke's view of the external world is a compromise between Sensationalism and Materialism?

3. Briefly unfold the argument by which Berkeley sought to discredit the materialism of his age. Was his reasoning a legitimate development of Locke's doctrine?

4. "Berkeley's polemic against matter confuses two things which are distinct from and even opposed to each other, the denial of the existence of an object in itself without relation

to any subject, and the denial of the existence of an object distinct from sensation."

Inquire into the meaning and accuracy of this criticism.

5. What was Berkeley's doctrine of Power or Cause? Compare it with any later theory known to you. Did Hume's argument disprove this theory?

6. What did Hume mean by "Natural Relations," and from what are they distinguished?

Explain the importance of this idea in his system.

7. What are the objects of human reasoning according to Hume? State precisely his views respecting the foundation of geometrical truths, and compare these with any later theory.

8. What did Hume mean exactly by saying that our knowledge of cause and effect "arises entirely from experience"? Is it possible to establish this proposition by taking "experience" in Hume's sense, or, if not, by giving a different meaning to this term?

SUBJECT FOR ESSAY.

(a) The process of Thinking: the relation of the logical connexion of ideas and their psychological association; the characteristics of Thought as an activity; how it is aided by Language; its psychological motives; and the nature of intellectual pleasures and pains;

or

(b) Emotion: its definition and nature; Classification of the Emotions, and Theories of Emotional Expression.

SECOND B.Sc. PASS EXAMINATION.

1879.

LOGIC.

The Paper given was the same as that set at the SECOND B.A. PASS EXAMINATION in the Morning. (See p. viii.)

LOGIC AND PSYCHOLOGY.

1. Take the proposition "All sciences are useful," and determine precisely what it affirms, what it denies, and what it leaves doubtful, concerning the relations of the terms "Science" and "Useful thing."
2. Show how to get the converse of the contrary of the contradictory of the proposition "Some crystals are cubes." How is it related to the original proposition?
3. Explain the meaning of the assertion that Induction is the inverse process of Deduction.
4. What is meant by Residual Phenomena? Estimate their importance in any sciences known to you.
5. What methods of research are open to the psychologist, and what are their relative values?
6. Define Sensation, and point out its exact relation to Intelligence or Knowledge.
7. Indicate the part taken by the Retina and the Ocular Muscles respectively in the discrimination of visible magnitudes.
8. What different meanings have been given to the term Consciousness, and what discussions have arisen out of these ambiguities?

PSYCHOLOGY.

1. What classes of sensations fall into a continuous scale, and on what physical circumstance does this mental property depend ? Does this peculiarity give them any special value ?
2. What do you consider to be the proper place of pleasure and pain in a classification of mental phenomena ?
3. Show, by help of psychological and physiological considerations, how it is that feeling is sometimes a furtherance of, sometimes a hindrance to, intellectual activity.
4. Define the end of the Fine Arts. Under what conditions are painful feelings admissible in Art ?
5. What are the essential elements of a firm or strong Will ? In what sense can a man of firm will be called free ?
6. What is meant by an Innate Moral Disposition ? How far can a man be said to bring his character into the world with him ?
7. If Ethics has to do with the good of society, wherein consists the difference between Ethics and Politics ?
8. What is meant by saying that Intuitive Morality is an unconscious Utilitarianism ?

1880.

LOGIC AND PSYCHOLOGY.

The Paper given was the same as that set at the SECOND B.A. PASS EXAMINATION in the Morning. (See p. ix.)

LOGIC AND PSYCHOLOGY.

1. Having regard to theories of Sensation and Memory, how do you explain the fact that Beethoven composed many of his greatest works, including the Choral Symphony, after he had become stone-deaf ?

2. Has a congenitally blind man a different idea of Space from that of ordinary people ?
3. Is there any natural or necessary limit to the mental acquisitions of an individual ? How would you proceed to estimate the ordinary extent of mental acquisition ?
4. Copyright in works of poetry, fiction, and art, is defended on the ground that such works are *created* by the author or artist. Analyze the meaning of the verb "create" in this relation.
5. How do you distinguish a Definition from other kinds of propositions ?
6. Taking any examples which you like to select, inquire whether it is necessary to prove mathematically the truth of the converse of a mathematical theorem, the truth of the original theorem being granted.
7. May we assume as a guide in scientific research that the Ultimate Laws of Nature are simple ?
8. What is the significance of the fact that a nearly constant percentage of letters are posted each year without addresses ? Does it prove the existence of, so to say, natural laws of letter-writing ?
9. Estimate upon logical and psychological grounds the wisdom of the English law which requires a unanimous verdict from a jury of twelve men.

PSYCHOLOGY AND ETHICS.

1. What class or classes of sensation are supposed to assist in the maintenance of the bodily equilibrium ?
2. What is meant by Common Sensation (*cœnæsthesia*), and how is it related to our emotional life ?
3. Classify the causes of Laughter, and inquire whether they are reducible to one principle.
4. How far may such actions as talking and walking be

called instinctive? How would you explain any instinctive character which you may attribute to them?

5. Examine the question whether ends or motives are general ideas or particular representations, or partly one and partly the other.

6. Define Sympathy and point out some of the different views which have been held respecting its relation to the Moral Sentiment.

7. Does it, in your opinion, make any practical difference whether Perfection or Happiness is erected into the standard of Ethics?

8. Trace briefly the history of some of the recent modifications of the Utilitarian doctrine.

B.Sc. PASS EXAMINATION.

1881.

LOGIC AND PSYCHOLOGY.

The Paper given was the same as that set at the B.A. PASS EXAMINATION in the Morning. (See p. x.)

LOGIC AND PSYCHOLOGY.

1. Give an account of the logical process known as Observation. Is this operation correctly described as an Immediate Inference? What is its relation to Contraposition, or Conversion by Negation?

2. What is meant by saying that cause and effect are only "two aspects of one phenomenon"?

What is the bearing of this view of causation on the doctrine of Plurality of Causes?

3. What is meant by Classification by Series, and to what extent is it available in the present condition of the sciences?
4. What meaning do you attach to the expression "a Fallacy of Observation"? Distinguish between a fallacy of observation and one of generalization.
5. What do you consider to be the best way of expressing the relation of Logic to Psychology?
6. Comment on the various uses of the word Consciousness to be met with among modern psychologists.
7. Discuss the correctness of the following assertion:—"It being almost all one for a man to be always sensible of one and the same thing, and not to be sensible at all of anything."
8. "All probable reasoning," says Hume, "is nothing but a species of sensation." Explain and discuss this statement. Describe the leading circumstances which determine the logical value or "weight" of personal testimony.

PSYCHOLOGY AND ETHICS.

1. Under what circumstances do objects appear single when seen with both eyes? How do you account for such single vision?
2. Under what conditions does a given period of time appear short or long, (1) while passing, (2) in retrospect? What explanation would you give of these facts?
3. What is meant by the Expression of the Emotions? How far do the various forms of emotional expression admit of explanation?
4. What is meant by Self-Love? Distinguish between Self-Love and Selfishness; and consider how far Benevolence is distinct from Self-Love as a spring of action.
5. Explain the terms Right (substantive), Right (adjective), Duty, Law, and Sanction.

6. Discuss the principles upon which sentences of punishment should be adjudged.

7. Examine the objection frequently urged against Utilitarianism, that the consequences of actions are beyond calculation.

8. "The very terms, *Moral* or *Ethical* rules, point to customs as their source. Some of these were doubtless obviously useful, but others were as unquestionably sentimental." Examine this statement, and consider its bearing upon the theory of a Moral Sense.

1882.

LOGIC AND PSYCHOLOGY.

1. Distinguish between Positive, Negative, and Primitive Terms, also between Concrete and Abstract Terms.

Show how the problem of ascertaining the extension (denotation) of a Negative term differs from that of ascertaining the extension of a Positive term; also consider the applicability to Abstract terms of the distinctions Singular and General, Connotative and Denotative.

2. What is the nature of Predication? Discuss Hamilton's doctrine that every judgment pronounces that, of two notions, one does or does not constitute a part of the other.

3. Explain at length the Opposition of Propositions, taking account of the leading differences among logicians concerning it.

On the common view what are the inferences to be drawn (1) from the truth, (2) from the falsity, of each of the categorical propositions?

4. Explain and illustrate what are meant by the Five Predicables. What is the meaning of saying that "a logical Highest Genus and a logical Lowest Species are both inconceivable"?

5. State and illustrate the rules of Definition. How far do you consider Definition to be a purely formal process involving no attention to the matter?

6. Define Syllogism, and point out its relation to everyday modes of deductive argument.

How would you express, according to the forms of ordinary logic, the following arguments?—

(a) A struck B : B is a constable : therefore A struck a constable.

(b) x is a contemporary of y , and y of z ; therefore x is a contemporary of z .

7. Some of our past experiences we may be supposed to have forgotten absolutely; others which we should never recollect may yet be recalled by appropriate circumstances; while others still, though absent from our present consciousness, we can revive at any moment. What explanation would you offer of these several states of mind? In your answer carefully distinguish between the psychological and the physiological aspect of the problem.

8. Compare the state of mind in which difference is detected where resemblances preponderate with that in which agreement is detected where differences preponderate. Do you consider the one mental operation to be easier than the other? Give reasons for your reply.

1. Distinguish carefully between the terms Natural Law and Natural Cause. Which term would you apply to Gravitation in Physics, and which to Association in Psychology?

2. Briefly describe the chief forms of Complex Effects, and expound the methods available for the ascertainment of their causes.

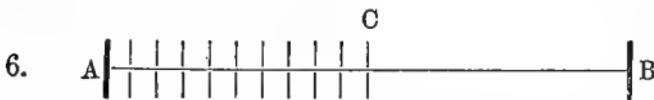
3. Examine the statement that a great improbability before the event may become a very small improbability after the event.

4. Explain the following, adding instances in illustration :—“Scientific language requires (1) a systematic Nomenclature, (2) a systematic Terminology, and (3) a systematic modification of terms to express theoretical relations.”

Words belonging to a nomenclature are said to have, besides the ordinary connotation, a peculiar one of their own. Explain this.

5. Explain concisely the nature of an Analogy, and the ground of Analogical reasoning.

What is meant by the Fallacy of False Analogy ? Give instances.



Though the line AB is bisected at C, AC appears longer than CB. How do you explain this ? Mention any other facts of the same nature and admitting of the like explanation.

7. What is an After-image ? If, while we have an after-image of a lamp-flame, we look first at a wall three feet off, and then at one two or three times as far away, the image appears much larger in the latter case. How do you account for this ?

8. State precisely what is meant by the Association of Ideas. Does it admit of psychological explanation ?

Is Inseparable Association within the same individual's experience possible ? If it is, give instances ; if not, say whether you consider the term psychologically accurate or defensible.

9. Analyze carefully the conception of Duration, and describe the several steps by which we have attained to it.

Short periods of time (less than 0.75 seconds) are apt to be over-estimated ; longer periods, on the contrary, to be under-estimated. What explanation would you give of this ?

PSYCHOLOGY AND ETHICS.

1. Distinguish between the localization of sensations within the organism and their projection beyond it.

Explain how it is that subjective auditory sensations are frequently referred to the ear itself.

2. Inquire into the way in which the movements of objects are perceived (*a*) by the moving eye, and (*b*) by the eye at rest.

After looking for a time at a moving object, as a stream, stationary objects, as the bank, appear to move. How would you account for such an illusion?

3. It is said that a certain admixture of pain intensifies a pleasure. What facts can be alleged in support of this statement? and how would you account for the effect here indicated?

4. Analyze the Emotion of Malevolence, and compare the pleasure of Malevolence with that of Benevolence. How far does Intellectual and Moral Culture destroy the capacity for this pleasure?

5. What do you take to be the best classification of Actions according to their psychological characters?

Elucidate the nature of Instinctive Action and of Arrested or "Inhibited" Action.

6. Define the terms Right (substantive) and Duty in their relation one to another. What is meant by a Natural Right, an Imperfect Right, and an Indeterminate Duty?

7. Define Merit.

By what considerations would you determine the degree of merit in any case? Point out particularly what you deem to be the relation between the merit and the difficulty of a virtuous action.

8. Compare the meanings of the maxim "Life according to Nature," as employed by the Stoics, by Butler, and by the modern Evolutionist.

1883.

LOGIC AND PSYCHOLOGY.

1. Examine the assertion that Science is "*une langue bien faite*," with special reference to mathematics and chemistry.
2. Can Induction, simple and direct, ever establish beyond dispute a causal conjunction? If so, when? If not, why not?
3. What is the proper sense of Axiom in Science? Distinguish as well as you can between (1) Theory and Fact, (2) Theory and Hypothesis; illustrating by reference to the biological doctrine of "natural selection."
4. Analyze fully what is meant when (1) a thing is said to happen by chance, and (2) the chance of its happening is said to be so and so, with a view to determine whether the word "chance" is used in the same or in different senses in the two cases.
5. Give what you take to be the ultimate psychological analysis of the process of Reasoning.
6. Explain the difference between passive and active touch, and inquire how far a similar opposition runs through the other senses.
7. Why does an object, perceived as single between the two fingers in the normal position, appear double between crossed fingers? Explain also the corresponding phenomenon in vision.
8. What is Common Sense?

1. Explain the traditional logical meaning of "Some." How far has it been maintained in the doctrine of the Quantified Predicate? How can O, consistently with it, be expressed in the form, "Not-all S is P"?
2. Give an account of the doctrine of Modality, and its

treatment by different logicians. Does it properly belong to Pure Logic?

3. Express the whole import of the disjunctive proposition "Either A is B or C is D" in the form of a single hypothetical, and prove the adequacy of your expression.

Contraposit the proposition: "All A that is neither B nor C is both X and Y."

4. Illustrate the argument *A fortiori*, and discuss the possibility of its expression in the common syllogistic form.

5. "No wise man is unhappy; for no dishonest man is wise, and no honest man is unhappy." Examine this inference, and if you think it sound resolve it into a regular syllogism.

6. What difference of meaning would you assign to the terms Sophism, Fallacy, Paralogism, and Paradox?

Explain precisely what is meant by *Petitio Principii*. Can this phrase be strictly applied to the Syllogism?

7. What is meant by the Relativity of Knowledge? Explain the leading senses in which the term is used.

8. Distinguish between a succession of perceptions and the perception of succession; and make a careful psychological analysis of the latter.

PSYCHOLOGY AND ETHICS.

1. Point out the different meanings that have been given to Consciousness as a psychological term, and state how you would yourself use it.

2. Describe the characteristics by which Impressions may be distinguished from Images, mentioning circumstances under which one or more of these distinctions fails so that hallucination results.

3. What do you understand by the Law of Diffusion?

Consider the connexion between the Emotional Expression and Purposive Action.

4. Distinguish between Appetite and Desire. Also, examine the following:—We do not desire things because they are good; but, rather, they are good because we desire them.

5. Explain what you take to be the real question at issue in the Free-Will controversy, and consider whether, and if so how far, “the perplexity of this controversy is mainly owing to the inaptness of the terms Liberty and Necessity to express the facts.”

6. Discuss the following statement:—“The basis of morals is to be found by determining the functions of human nature.”

7. Distinguish between the intellectual and the emotional elements in the so-called Moral Faculty; mention ethical writers who have unduly emphasized either, and show how this has affected the character of their ethical teaching.

8. Compare critically the ethical doctrines of Bentham and J. S. Mill.

SECOND B.Sc. EXAMINATION FOR HONOURS.

1879 and 1880.

The Papers were the same as those set at the SECOND B.A. EXAMINATION FOR HONOURS in the same years. (See pp. xl. and xliii.)

B.Sc. EXAMINATION FOR HONOURS.

1881, 1882, and 1883.

The Papers were the same as those set at the B.A. EXAMINATION FOR HONOURS in the same years. (See pp. xlvi., l., and liv.)

M.S. EXAMINATION.

1880.

LOGIC AND PSYCHOLOGY.

1. What do you understand by Simple Apprehension? Can there be such a process?
2. Can the ordinary doctrine of the opposition of propositions be applied to disjunctive propositions?
3. Explain the peculiarities of the second figure of the syllogism.
4. Would it be easy in the present condition of physical science to establish the existence of a "vital force"?
5. What methods of induction are principally illustrated in modern physiological experiments?
6. What is meant by the Relativity of a sensation? What classes of sensations are most extensively controlled by this condition?
7. Give a brief account of the physiological and psychological processes which are involved in the act of recognizing the visible symptoms of a particular disease.
8. How do you account for many persons obeying the laws of honour who pay very little regard to any other laws?
9. Without reference to any authorities, discuss the question whether talent or capacity is more due to heredity or to education.

1882.

LOGIC AND PSYCHOLOGY.

1. Explain fully what is meant by the Denotation and Connotation of a Term.
Illustrate the evils incident to the existence of vague or ill-defined terms in science, and show how you would proceed to fix the exact connotation of such a term.

2. State the special rules of Syllogism and show that they follow from the Laws of Thought and the *Dictum de Omni et Nullo*.

3. What do writers on scientific method mean by "Varying the Circumstances ;" and for what reasons is such variation necessary ?

State and explain what you hold to be the most important rules for "varying the circumstances."

4. Write a brief exposition of the Deductive Method.

Examine the statement that it is the tendency of all the sciences to become deductive.

5. Describe briefly the phenomena included under the head of Muscular Sense.

What part does the Muscular Sense take (a) in the direction of the eyes, (b) in the maintenance of the bodily equilibrium ?

6. State the chief laws of Memory, distinguishing between the conditions of temporary and of permanent, and between those of involuntary and voluntary, memory.

7. "Thinking is the mental separation of things which differ from one another, and the mental combination of things which resemble one another." Examine this statement.

8. Inquire into the psychological nature of Self-control as exemplified (a) in the repression of emotional agitation, (b) in the inhibition of an impulse to seize a present gratification.

Is anything known respecting the physiological accompaniments of the process ?

1883.

LOGIC AND PSYCHOLOGY.

1. Explain, giving instances :—

(a) Compatible, Contrary, Contradictory, Terms ;

(b) Consistent, Contrary, Contradictory, Propositions.

(c) Extent of a Term, Quantity of a Proposition, Distribution of a Predicate.

2. What is Formal or Logical Fallacy? Explain and illustrate the Fallacies—(1) *A dicto simpliciter ad dictum secundum quid*; (2) *Post hoc ergo propter hoc*.

3. What is the difference between a Compound Effect and a Heteropathic Effect? Can an effect be wholly compound or wholly heteropathic?

4. Describe shortly the methods employed for distinguishing *Casual* from *Causal* Conjunctions, and give instances in illustration of each.

5. Trace out the special analogy there is between the sensations of Taste and Smell. Do Touch proper, Temperature, and Pain, seem to you different modes of one Skin-sensibility, or different kinds of sensibility (like Taste and Smell)? Give reasons.

6. Analyze the faculty of Language, both spoken and written, with a view to classifying its morbid conditions.

7. Give a full and exact analysis of the process of Deliberation.

8. What do you understand by Moral Inability? How would you distinguish between this and Moral Irresponsibility?

M.D. EXAMINATION.

1879.

LOGIC AND PSYCHOLOGY.

1. Examine, in the case of each of the following propositions, the meaning of the assertion that the proposition is false:—

- (1) No grasses are poisonous.
- (2) Oxygen, hydrogen, and nitrogen cannot be liquefied.
- (3) A tooth is either an incisor, a canine, a bicuspid, or a molar tooth.

2. "The angles at the base of an isosceles triangle are equal." What can be inferred from this proposition by Obversion, Conversion, and Contraposition, without any appeal to geometrical proof?

3. Illustrate Mathematical Induction in its several kinds or cases, and discuss its relation to induction in the physical sciences.

4. Illustrate the scientific value of exceptional phenomena, and show in how many ways they may be disposed of or reconciled with physical law.

5. Classify all the sensations connected with the Eye, and point out their comparative importance in relation to our knowledge of the external world.

6. What is the difference between Automatic or Reflex and Volitional Attention? Illustrate the action of each in relation to the intellectual processes of Ideation (Imagination and Thought).

7. Under what conditions do voluntary acts tend to become relatively unconscious? Is this fact capable of being explained by any general laws of nervous action?

8. Define Motive; and point out what you hold to be the relation of a man's motives to his moral character. Can motives be spoken of as ethically good or bad?

1880.

LOGIC AND PSYCHOLOGY.

The Paper was the same as for the M.S. EXAMINATION.
(See p. lxxxviii.)

1881.

LOGIC AND PSYCHOLOGY.

1. "For every positive concrete name a corresponding

negative one might be framed." Illustrate the meaning of this statement, and find the precise negatives of the positive terms *Man*, *Physician*, *Red*, *Thing*.

2. Show how it is that the Second Figure is incapable of establishing an affirmative conclusion, and the Third Figure incapable of establishing an universal conclusion.

3. Is it possible always to determine exactly where Observation ends and Inference begins? If not, how is the logician to distinguish between the two?

4. State fully and illustrate the method known as that of Concomitant Variations. Is this method merely a substitute for the Method of Difference, or something more?

5. By what marks are Sensations or Impressions psychologically distinguishable from Images or Ideas? What is meant by the phrase, "Subjective Sensation?"

6. We speak of "muscular efforts," of "efforts to recollect," and of "efforts to think." What do you understand by *effort* in these cases? How far is there in each of them any outward manifestation of effort, and what do you infer from it?

7. Describe the primary attributes of Intellect. Explain the dependence of the higher forms of Intellect upon Language.

8. Define Moral Responsibility, and consider how far the terms Voluntary and Involuntary coincide with Deliberate and Impulsive.

1882 and 1883.

LOGIC AND PSYCHOLOGY.

The papers were the same as for the M.S. EXAMINATION.
(See pp. lxxxviii. and lxxxix.)

D.Sc. EXAMINATION.

1880.

LOGIC.

1. De Morgan says :—"In all syllogisms the existence of the middle term is a *datum*." Inquire into the accuracy of this assertion. What does existence here mean ?
2. "Similar figures consist of all figures whose corresponding angles are equal and whose sides are proportional." Give *all* the propositions involving not more terms, which can be inferred from the above. Give also one proposition equivalent to it.
3. Assign propositions concerning the terms, *gem*, *rich*, *rare*, whose aggregate force shall be such that no further assertion can be made about the same terms without contradicting the propositions assigned.
4. Truth applies, it is said, only to propositions. If then, a simple term is not capable of truth, it must be false ; because everything must be either true or false. Solve this difficulty.
5. Examine fully the question whether hypothetical propositions are in any respect essentially different from categorical propositions. If different, how do they differ ?
6. Is the foundation of the Theory of Probability inductive or deductive, or both, or neither ?
7. What is implied in the expression Uniformity of Nature ? Do the Laws of Nature admit of exceptions ?

PSYCHOLOGY.

1. What are the methods of research available to the psychologist ? Do these, in your opinion, entitle psychology to a place among the sciences ?
2. Give an account of some of the recent attempts to

measure sensation. What is the relation of Fechner's psycho-physical law to the laws of nervous fatigue?

3. Give the results of recent physiological research into the nature and conditions of the sensations of colour, and inquire, in the light of these researches, into the relations of physiology and psychology.

4. Define Attention and assign its relation to Consciousness. Is anything known respecting the physical basis of Attention?

5. Define Illusion and Hallucination, and name the psychical and physical conditions of each. How far do you consider the study of abnormal perception is fitted to throw light on the nature of normal perception?

6. Compare the meaning of the terms subject and object as applied (a) to the relation of percipient mind and perceived thing, and (b) to the relation of mental state and bodily and more especially nervous process.

7. What do you regard as the fundamental mental operation in reasoning? How would you define the range of this operation in mental life?

SUBJECT FOR ESSAY.

This Paper was the same as that for the M.A. EXAMINATION, BRANCH III. (See p. lx.)

HISTORY OF PHILOSOPHY.

1. Compare, critically, some of the different views which have been entertained respecting the scope and function of philosophy.

2. What fundamental contrasts in philosophic conception and method are indicated by the terms Idealism, Sensualism or Sensationalism, Materialism, Realism, Spiritualism, and

Rationalism, and how do you conceive these contrasts to be related to one another? Illustrate your answer by a reference to the principal historical examples.

3. Do you consider the modern doctrine of Evolution to be a scientific or a philosophic theory, or both?

4. Trace the influence of the progress of philosophic conception and of the physical sciences on psychologic method.

5. What do you regard as the fundamental difference between the ancient and the modern way of formulating ethical problems, and how would you account for this difference?

PSYCHOLOGY.

1. What reasons may be urged for and against regarding Emotion as a phenomenon of the intellectual side of mind?

2. Discuss, in the light of recent psychological theories, the question whether all varieties of Pleasure and Pain are reducible to one principle.

3. Estimate, by help of the history of æsthetic speculation, the possibility of determining an objective standard of Taste.

4. "Appetite is the ancestor of tyranny, but it is also the ancestor of love." Expand and estimate the truth of this position.

5. What different views are entertained respecting the nature of the mental phenomenon known as Desire, and with what different theories of volition are these connected?

6. Investigate the nature of Habit on its mental and its physical side, and indicate what you regard as the range of this principle in the region of voluntary action and of mental life as a whole.

7. Do you consider that the study of the origin of the Moral Sentiment has any bearing on the question of the validity of its judgments?

1881.

LOGIC.

1. Give an abstract of the scholastic doctrines of definition.
2. What are the analogues, if any, in logical operations, of addition, subtraction, multiplication, and division in mathematics? Allude in your answer to the logical use of the symbols

$$\frac{1}{1}, \frac{0}{1}, \frac{1}{0}, \frac{0}{0}.$$

3. Investigate in a thorough manner the question whether the logical copula does or does not imply the notion of existence. When we say that the assertion "All men are mortal" implies the existence of a class of things which are neither men nor mortal, what does this implication of existence exactly mean?

4. Compare the logical meaning of the conclusion of each of the following moods of the syllogism with the joint meaning of the premises in each:—Barbara; Festino; Darapti; Bramantip.

5. Exponent the doctrine suggested by the formula *Purpurea, Iliace, Amabimus, Edentuli*.

6. State concisely but exactly the contributions to logical science made by the following philosophers:—Roger Bacon; John of Salisbury; Raymond Lully; Abelard; Ramus; Ploucquet.

7. Investigate the question whether it is possible to argue cogently by means of uninterpretable symbols.

8. It is known that whenever the cause A occurs, the effect C follows, and there is also an absence of D and E, the presence of which is precluded by A. These results never appear except when A is the cause. But it is also known that C appears when B is present, but then C is in company with both D and E. Observations having been

made in circumstances such that either C or D must appear at each observation, it was found that

C	occurred in all	<i>u</i>	times.
D	"	<i>v</i>	"
C	"	with D	<i>w</i>
D	"	"	E <i>x</i>
B	"	"	C <i>y</i>

Finally, in *z* cases neither D nor E was observed.

It is required to determine how often A and B must each of them have been the causes in operation, and generally to solve the results of the observations.

PSYCHOLOGY.

1. What do you consider to be the probability of our ever being able to erect psychology into an exact or quantified science?

2. It was said by Mr G. H. Lewes that we cannot understand human intelligence except by the help of sociological data. On the other hand, it is commonly asserted that the science of sociology must rest on that of psychology.

Examine into the compatibility of these assertions.

3. State exactly what is known, whether certainly or conjecturally, respecting the conditions by which the ear judges of the direction of sounds, and estimate the sufficiency of the existing theory.

4. "Though internal feeling habitually depends on external agents, yet there is no likeness between them either in kind or degree." Examine carefully into the correctness of this assertion, and point out what seem to you to be the philosophic questions which arise out of it.

5. Give the results of recent research with respect to the bearing of the pre-existing condition of the centres on the

duration of the nervous processes involved in receiving a sensation.

6. What does pathological evidence appear to you to teach respecting the exact seat of the muscular sense?

SUBJECT FOR ESSAY.

This Paper was the same as that for the M.A. EXAMINATION, BRANCH III. (See p. lxvi.)

HISTORY OF PHILOSOPHY.

1. What do you consider to be the principal characteristics of Greek philosophy as a whole? In what periods of its development are these characteristics most conspicuous?

2. It has been recently said that Spinoza's doctrine of one substance with two attributes has been established by modern science. Estimate the truth of this contention.

3. Trace the growth of the modern doctrine of evolution from its beginnings. What do you consider to be the place of this doctrine in philosophy as a whole?

4. A recent writer has maintained that Kant's proposal to critically investigate the faculty of cognition was no new departure in philosophy. Estimate the correctness of this view.

5. What influences appear to you to account for the present prominence of psychology among philosophic studies?

PSYCHOLOGY.

1. State fully the difficulties in the way of a good scientific classification of the Emotions, and say how far you consider existing classifications to have been successful in surmounting these difficulties.

2. Inquire carefully into the meaning of saying that a feeling is instinctive. Is there any definite criterion by which we may ascertain what emotions, in the case of man, are instinctive ?;

3. Should a theory of Laughter, in your opinion, cover the facts derived from the study of different periods of life, different races of man, and different species of animals ? Do any current theories appear to you to give an adequate account of these facts ?

4. Examine critically the principal modern theories respecting the origin of the musical sense.

5. Estimate any recent attempts to solve the question of the worth of life according to a scientific method.

6. Compare the ethical doctrine of Butler and of Kant, as well as the influence of each on subsequent ethical speculation.

1882.

LOGIC.

1. Expound the nature and function of Negation, taking account of the following views concerning the true import of the proposition A is not B :—

- (1) That its true form is A is non-B.
- (2) That it is not an independent proposition, but implies the positive, A is B, which it denies.
- (3) That the information it really gives is: AB = O.

2. Explain the symbolic process called Elimination. Is there any similar process in ordinary Logic ?

Having stated the following propositions in symbols, eliminate the reference to property. Offences (*w*) are prohibited acts (*x*) affecting the person, (*p*) property, (*q*) or condition (*r*) of another.

3. Discuss the place of Probability in a system of Logic.

If you regard Chance as subjective, how do you explain the calculation of probabilities? if as objective, upon what do the laws of probability rest?

4. State and carefully examine the evidence upon which Mill rests the validity of his Inductive Methods.

5. In ascending from the surface of the earth it is found that the thermometer and barometer fall continuously, and that a given mass of matter weighs continuously less and less; also in descending below the surface of the earth the thermometer and barometer are found to rise continuously, while a given mass of matter weighs continuously less and less. Supposing nothing known about the causes of these phenomena, state concisely what inquiries and experiments you would propose with the view of determining their causal relations.

6. Briefly explain the following terms, and mention their authors:—*Latens schematismus*, *Instantiae crucis*, *Characteristica universalis*, Ultra-total Quantification of Middle Term, Self-informative Chain, Universe of Discourse, Secondary Propositions, Logical Alphabet.

PSYCHOLOGY.

1. Describe the several stimuli and their effects upon the terminal sense organs so as to exhibit what parallelism there is between these stimuli and the corresponding sensations as regards quality, intensity, and possible complexity.

2. Explain and criticize the hypothesis of Local Signs. Do you regard it as necessary to a psychological theory of Space? What evidence is there in its favour?

3. Give some account of the experiments that have been made to determine the time occupied by psychical processes. Do you think such investigations are likely materially to advance psychology as a science?

4. Exhibit fully the psychological development of the popular conception of Self, taking special account of the following factors:—(1) the body in its relation to the external world, (2) the contrast of perception and imagination, (3) social life, (4) language and proper names, (5) popular metaphysics or “animism.”

SUBJECT FOR ESSAY.

This paper was the same as that for the M.A. EXAMINATION, BRANCH III. (See p. lxxi.)

HISTORY OF PHILOSOPHY.

1. “The whole pre-Socratic Philosophy is in its aim and content a philosophy of Nature.” Illustrate this statement, and account if you can for the fact that early philosophy took this direction.
2. Give the main points in Aristotle’s theory of cognition, paying particular attention to the characteristics of true or scientific knowledge, and the grounds of its certainty.
3. Estimate the claims of Bacon to be regarded as the founder of modern inductive philosophy.
4. Indicate the chief points of dispute between Locke and Leibnitz, and give your opinion of the results of the controversy.
5. What did Kant understand by Things-in-themselves? Examine critically the place he assigns to them in his system of philosophy.
6. Trace the origin and rise of modern Pessimism.

PSYCHOLOGY.

1. Give precise meanings to the terms Consciousness and Attention. Examine the doctrine of “unconscious” or “sub-conscious” mental processes.

2. What is known respecting the nature and affects of the Vital Sense (Coenæsthesia)?

Take account in your answer of the phenomena which accompany its disturbances in mental disease.

3. Carefully analyze Taste, and inquire into the chief circumstances which modify it among races and individuals.

4. Give what you consider to be a complete analysis of Desire, and point out its bearings on the leading modern theories of the Will.

5. Sketch out what seems to you to have been the most probable course of development of the Moral Sentiment in the early stages of human history.

1883.

LOGIC.

1. Enunciate the Laws of Thought on which the science of Logic appears to you to rest, indicating how these laws apply (1) to Immediate, (2) to Mediate Inference.

Examine the distinction of Formal and Material Inference. Is the term Inference applicable in the same sense to both? Briefly compare the views of Leibnitz and of J. S. Mill as to the ground of material inference.

2. Give a brief critical account of the chief plans that have been proposed for the diagrammatic representation of the logical relations of terms and propositions.

3. Discuss (1) the possibility and (2) the utility of a symbolic logic of Intention. Mention any attempts with which you are acquainted to find general relations between the intention and the extension of a concept.

4. Compare the main principles of Inductive Logic as expounded by Bacon, Mill, Whewell, and Jevons respectively.

5. Compare and distinguish elimination of chance by

multiplication of instances, and elimination of error by multiplication of observations.

6. What do you understand by a Natural, and what by a Diagnostic Classification? Examine Whewell's doctrine that "natural groups are given by Type and not by Definition."

PSYCHOLOGY.

1. Describe the sensations of tone or pitch, pointing out the relation between these and sensations of musical timbre, vowel sounds, and noises. Examine the attempt to compare sensations of pitch with those of colour.

2. What is meant by Reaction to Stimulus and Reaction-time? Enumerate the chief circumstances which influence the length of the Reaction-time, and inquire into the causes of these variations.

3. Give an account of the main features of the process known as the Revival of Presentations. What is meant by the immediate and what by the mediate reproduction of representations? Point out the bearing of recent experiments on the nature of the process.

4. Illustrate by a reference to the language of early life and of the uneducated, and to the early stages in the growth of language, the way in which the idea of Cause appears to arise to consciousness.

5. Give the main conclusions reached by recent research in the physiology and pathology of speech, pointing out the connexion of these results with what is known by psychological observation concerning the relations of speech and thought.

SUBJECT FOR ESSAY.

This paper was the same as that for the M.A. EXAMINATION, BRANCH III. (See p. lxxiv.)

HISTORY OF PHILOSOPHY.

1. Examine the merits, as philosophical theories, of teleological and mechanical explanations of the Universe. Compare in this respect the Aristotelian and the Epicurean philosophies, or the philosophies of Leibnitz and Spinoza.
2. Compare the theories of External Perception propounded by (1) Berkeley, (2) Reid, (3) Hamilton.
3. Discuss the following:—"The whole history of intellectual progress is just the history of the development of a consciousness of difference into a consciousness of contradiction, and again of a consciousness of contradiction into a consciousness of the higher principles in the light of which the contradiction disappears.
4. Explain the difference between "Substance" and "Thing *per se*" in Kant's *Critique of Pure Reason*, and discuss the relation of the former to (1) Time, and (2) Space.
5. State and examine what you conceive to have been Plato's Theory of Knowledge, taking account of Aristotle's strictures upon it.
6. Trace in outline, beginning with Descartes, the course of modern speculation as regards the relation of body and mind.

PSYCHOLOGY.

1. Explain what you understand by a "state of mind," distinguishing between a mental state and a mental faculty. Is a state of mind always complex, or may it be assumed that the earliest states at least are simple? Where states of mind admit of analysis, what, if any, are the constant elements? Discuss the different views that have prevailed on this point.
2. Psychologists talk of Emotions, Passions, Affections, Sentiments. Carefully distinguish between these terms,

and point out any relations between them that you think of importance. Also discuss (1) the possibility, (2) the principle, of classifying emotive states.

3. Carefully analyze the psychological causes of Laughter. Is there anything analogous to these in the physical causes of it?

4. Up to a certain point and in certain circumstances, a man can control his movements, can control his thoughts, and can control his emotions ; under other circumstances any or all of these may prove uncontrollable. Give an account of these facts so as to elucidate the conditions of these several forms of control, and the nature of their limits.

5. What do you understand by Temperament ? Consider how far it is possible to find (1) psychological evidence for the popularly recognized temperaments, and (2) psychological explanations for these and analogous differences in disposition or cast of mind.

EXAMINATION IN THE ART, &c., OF TEACHING.

1883.

1. Explain what you understand by Mental Development, and indicate briefly but precisely the course of it in an average case.

Distinguish between the psychological and the logical sequence of studies : which is the teacher to follow when the two differ ?

2. Give a psychological account of the state of mind called Interest, comparing the direct interest M. N. takes in bird-nesting with the reflected interest he takes in the paradigm of *τύπτω* from the rewards or punishments depending on it.

Discuss the possibility of securing the former kind of interest in school work.

3. What do you understand by Training the Senses? State concisely the advantages secured by it. Are any of these obtainable in other ways?

4. What is Memory? State the conditions of remembering, and discuss the question how far the acquisition of a retentive and ready memory for one department of knowledge involves an improvement of "memory in general."

5. It is said that Moral Training implies sympathy between parent (or teacher) and child. Inquire into the meaning of this statement, and compare the general moral effect of a severe discipline, *i.e.*, one relying mainly on fear of punishment, with one which appeals to personal affection and sympathy.

6. What is meant by exercising a child's free-will? Illustrate how this can be done consistently with the maintenance of a due measure of authority.

7. What is meant by a Habit? What general psychological principles does it illustrate? Show how a habit, such as punctuality, is formed. How is the process complicated when an old habit has to be broken through?

8. Give the general principles which, in your opinion, should govern the infliction of Punishment. Illustrate the effects of remoteness and uncertainty of punishment.

1884.

1. What do you understand by Observation? Do you consider it necessary to train all children to observe? Give full reasons for your answer.

2. "Things become mentally associated mainly in the order in which they have been presented, or at least attended to: thus of a series ABCD, B will recall C rather than A, and C will recall D but not B." Briefly explain and illustrate this statement, and discuss at length its educational bearing.

3. The knowledge of any common fact involves (1) Things, (2) Ideas, and (3) Words or Symbols. Explain, so far as it is of educational interest, the relation of ideas to things, and of words to ideas.

4. Distinguish between Generalization and Abstraction.

How is it that people often use a term correctly and yet cannot define it? How would you, in teaching, guard against this imperfection?

5. How is mental acquisition affected according as a child is taught separately or in conjunction with others?

6. The kind of play to which a child takes from the beginning may be regarded as indicating its natural aptitudes. Illustrate and explain how this should be.

7. Point out and illustrate the moral significance of the fact "that practical habits are formed and strengthened by repeated acts, and that passive impressions grow weaker by being repeated upon us."

8. What limits would you set to the "discipline of consequences" in dealing with the young?

